

## California State Journal of Medicine.

Owned and Published Monthly by the

Medical Society of the State of California

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Secretary State Society,	Butler Building,
State Journal,	San Francisco.
Official Register,	

Telephone Douglas 2537

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VOL. VII

JUNE, 1909.

No. 6

### EDITORIAL NOTES.

The American Medical Association has stimulated medical organization and medical betterment in every portion of the United States, during the last ten years. To say that it has distinctly improved the standard of medical education and medical efficiency, is to put the case mildly. It has built up the foremost medical journal in the world. It has, for the past five years, steadily worked toward the clearing away of a mass of imposition, fraud, dishonesty and trickery that has been foisted upon the medical profession by grasping commercialism. In no single instance has any honest cause, any honest interest, any honest endeavor or any honest enterprise been attacked or molested; the dishonest have merely been disclosed in the nakedness of their dishonesty. But this dishonesty is wealthy; the nostrum manufacturerers, collectively, represent an enormous amount of illgotten fortune—and no small part has upon it the blood-taint. The nostrum interests have done everything in their power to stop the course of exposures in the *A. M. A. Journal*; to stop the truth-telling. At every point they have failed, and as a last resort they are now attempting to discredit the Association, through its Secretary and its Board of Trustees. They have found that they cannot fight the whole Association; they have no arguments with which to fight the work of exposure, for only the truth is told and only dishonesty exposed. Therefore they have devoted their energies to attacks upon Dr. Geo. H. Simmons, who, as Secretary, Editor and a member of the Organization Committee, has done a large part of the work

of building up the Association. What matters it that Dr. Simmons was a Homeopath, twenty-five years ago? We have many honored Homeopaths in our own State Society to-day; what would it matter if he were still a member of that school of medicine? Is it *results* that count in this world, or is it attitude and position? The latest attack is an attempt to show that Rush Medical College granted Dr. Simmons a regular degree after he had devoted but little time to actual study in that school. That was in 1891-2, a time when every school in the country was lax and when almost the full course was granted as a credit to Homeopathic graduates who had been in successful practice. Hundreds of cases might be discovered in which regular degrees had been granted in similar circumstances by prominent schools. We do not know that the facts alleged are true, but even assuming that they are, what about it? It is results that count; what a man has done; how he has made good. One is reminded of the remark attributed to Lincoln when told that General Grant drank large amounts of whiskey; he said he would like to discover the brand and send some of it to the other Union Generals. So, too, it would be a mighty good thing for the medical profession of the United States if we could find a few more Homeopaths of the same sort who obtained regular degrees in the same way. And, incidentally, it would also be a good thing if we could get rid of some disgraces to medicine who sell themselves to such unsavory interests as are attacking the Association. Do not be fooled.

And now comes "The Pacific Coast Hospital Association," "A progressive modern enterprise that combines money-making with a great public benefaction." The offices of the institution are in the Union Savings Bank Building, Oakland, and it seems to be presided over and generally managed by one McCullough Graydon. A booklet just received is most illuminating. The scheme, of course, is the same old "dollar a month" medical-treatment-contract business. This present "Association," however, interjects a somewhat novel feature into the nasty business. The booklet is a booster for the company in its efforts to sell 20,000 shares of stock at \$1.00 per share, which the promoters undertake to demonstrate will pay at least 7% and probably much more. Indeed, simple arithmetic is artfully employed to show that "on a gross income of \$60,000 per year we have net earnings of over 20% on (probable) outstanding capital. In due time this \$60,000 must become \$200,000 or even \$300,000—with net returns of 50 to 75% on the capital invested." This is indeed, to use the words of the booklet, "commercializing medical service"; it is also commercializing human life, prostituting a profession, probably robbing the poor and doing many other and various things, for is it in the range of possibility that 300,000 people in this vicinity will join such an institution—or even 30,000? We are told that the subscriber will have the very best of

medical attention; but who are "the very best" medical men who are to do the attending? As set forth in the booklet, the Oakland "physician in charge" is Dr. W. L. Channell, a graduate of Cooper, 1905; the individual filling the same office in San Francisco is Dr. A. J. Remmel, a classmate of his illustrious fellow official of Oakland; the Berkeley "physician in charge" is Dr. C. H. Freeman, U. C., 1894; the subscribers in Richmond will have the proud honor of being attended by Dr. H. V. Prouty (E), Calif. Med. Col., 1904. Of course you are all familiar with these names which have "gone ringing down the corridors of time" as foremost in the medical profession. "The work of our physicians is disinterested and conscientious. They receive a regular salary—not a fee per visit.

. . . We secure, at a moderate cost, the services of excellent physicians; we give them the desired opportunity for varied practice and a large acquaintanceship. . . . Such service is no longer 'non-ethical,' since railroad companies and other large employers, as well as hospital societies, employ salaried physicians." Of course we get back to the same old thing—the illustrious examples of medical commercialism. "In San Francisco the French Hospital and the German Hospital societies are notable examples." And the poor subscribers do not know what they are getting; it is always the people who pay for their ignorant desire to get something for nothing; but in the end, they get just what they pay for.

The extreme modesty of insurance companies has been pointed out more than once. A few years ago Mr. Hughes, now Governor of New York, discovered a number of different diseases of insurance companies, all of them involving enlargement of the gall. But a new one is in the field. It was almost bad enough when they insisted upon fixing the amount they would pay for medical examinations and made that amount a ridiculously small sum for a considerable amount of work. Most of the companies that tried to force the \$3.00 fee have gone back to the \$5.00 minimum. We believe the Travelers has not publicly announced the fact, but nevertheless, it is paying \$5.00 to all of its examiners in this territory. But that is merely by the way; the real joke is the open-hearted liberality of the National Life Insurance Co., of the U. S. A., A. W. McCleave, Medical Director. This philanthropic concern sends out a circular blank to physicians who, in some way, it knows or believes to be attending the family of a prospective policy holder. It offers to pay the physician the magnificent sum of one whole, large, round dollar if he will fill in the blank and forward the same to the company. And what the company wants for its dollar is a mere nothing. It just would like to know whether there is any hereditary disease in the family, with full particulars; the personal history of the applicant, with full particulars; whether or not he has had any recent illness, his habits and whether he is considered a good subject for life insurance. Now,

that is truly modest and one can but wonder why the insurance company should so recklessly offer a dollar for such a trifling thing. Possibly, if the right sort of letter were to be written, the company might find the physician glad to pay something for the privilege of acting as an honorary assistant medical referee. And then, a rivalry might be built up and one physician might be led to bid against another for this privilege. The prospect is very attractive for speculation. But why give away so much money? Why should an insurance company spend all its money so recklessly, and in one place? No wonder they are all poor and objects of charity!

Last year, at a meeting of the House of Delegates, a committee was appointed to investigate the

question of the State Society undertaking the defense of its members in malpractice suits, and to report at the San Jose meeting. Unfortunately, the chairman, Dr. W. S. Fowler, was prevented from attending the San Jose meeting and no report was introduced. The matter was therefore referred to the Council and at a meeting of that body on April 22nd, a special committee of the Council was appointed to take up the work and report back at an early date. This report will probably be made to the Council in June, as it is the desire of every councilor to have the work begun as soon as possible. The plan has been in operation in a number of states for varying periods of years and in every instance has been most successful. The Council desires to receive the views of county societies and of individual members and requests that they be sent to the Secretary, Butler Building, San Francisco. This work could undoubtedly be undertaken at a minimum cost to the members; one or two dollars a year ought to amply cover it and secure as good as, if not better, protection than can be had from an ordinary insurance company. The vast majority of such suits are pure and simple blackmail, and it has been the experience in other states that an individual will hesitate before bringing a suit against the united medical profession of the state when he will not stop or hesitate about suing an individual or a corporation. It is mainly a question of what plan to follow in financing the proposition. All the money that comes in from ordinary sources is required for the regular expenses of the Society, organization work, etc. Would it be worth while to you to secure absolute protection in malpractice suits—to know that the suit would be fought to the last ditch at no expense to yourself, by the payment of one or two dollars additional each year? This money would go into a special fund to be used for defense and for no other purpose. If the idea strikes you favorably, set forth your views and send them to the Secretary to be presented to the Council.

#### MEDICAL DEFENSE.

In Illinois there has been going on for some time a discussion of the aggravated evil of dividing fees between the surgeon operating upon the patient and the physician referring the patient to the surgeon. The evil exists, doubtless, everywhere; it is a contemptible and a dishonest practice. But is it not a question of whether one can legislate honesty into the individual? Here in our own state there are many well known surgeons of whom it is commonly understood that they will give a large portion of the fee charged for an operation, to the physician who sends the patient to them. They have cultivated agents, as it were, in many towns and counties and these agents know that their "commission" will be paid promptly. The judgment of one who will accept this "commission" must certainly be warped by the warm glow that cometh from the dollars to be received; he can not refer a patient to the patient's best advantage, for he is afflicted with monetary mental astigmatism. The patient is wronged for he is being deceived and deceit is about the most detestable of all forms of petty crime. The surgeon is prostituting a noble and a liberal profession to pure commercialism. These things are admitted by every honest man, and the fact that the very men who participate in the underhand transaction "keep it dark," is conclusive evidence that they, in their hearts, also admit the dishonesty of it. Who that is guilty of the practice has sufficient real belief in the honesty of his deeds to come out openly and acknowledge that he is "splitting fees"? Is there a single one? If so he has not yet been heard from! If the physician wishes to do so, and he not only can but should, let him charge his fee for being with his patient and assisting at the operation; but let the patient know exactly what he is being charged, and what for. Is there not some way in which the shame of this vulgar transaction of "splitting fees" can be brought home to those who are guilty and the dishonest practice stopped or checked?

It is most singular how, under the operation of either the Federal Pure Food and Drug Law, or the various state pure food and drug laws, the statements in regard to drugs or medicinal preparations will change. A case in point is furnished by the Parker Chemical Co., which puts out a certain something called "diozo." A "diozo" circular of the unregenerate days says "Diozo kills germs in three minutes"; "Diozo is a solid germicide (not a liquid)." It was—and may be is—supplied in a paper carton with instructions to "hang it up; that's all" and then presumably some subtle thing emanates from the package and kills germs thus furnishing "health insurance at a cost of less than one cent a week." Again we read that "Diozo is superior to all liquid disinfectants because it evaporates slowly, and cannot spill." But now stepped in the State Hygienic Laboratory which, most impertinently, asked some questions. The solid cake, when tested, did not seem to do much of anything and even a

solution of it "failed to kill bacteria in thirty minutes." Alas! alas, for the "health insurance at less than one cent a week." But is the company stumped? Not at all. They changed the formula and advised the laboratory that they were getting up a new carton with new directions, to wit, "to crush the cake into powder and dissolve it in one gallon of water, allowing it to stand for 24 hours and then use the liquid as a disinfectant." What has become of the superior advantage of a *solid* over a *liquid* article? But "it has not been our intention to deceive the public in regard to 'diozo'"; certainly not, no nostrum faker ever wanted to deceive the dear public; of course not; the idea is preposterous. They were just mistaken and carried away with benevolent enthusiasm; when they really investigate their wonderful product they "find that in order to really kill germs the atmosphere of the room would have to be saturated to such an extent with disinfecting gases that it would be also deadly to human beings,—therefore we are now preparing new circulars reducing our claims as to the disinfecting properties of the vapors produced by the cabinet." How singular this change of attitude when only a few short weeks ago the concern stated in its circular "The diozo disinfectant is the most powerful known to science. It kills deadly disease germs, yet its vapors may be inhaled without harm and are even beneficial in cases of infection." It is heartrending to see people with no "intention to deceive the public," and with such overwhelming philanthropy, falling into these trifling errors of fact, doubtless carried away by their own enthusiasm in the cause of poor, suffering humanity. Alas!

The Nurses' Association of San Francisco County has had, for some time, a Central Directory through which nurses are furnished at a moment's notice. It is a very useful part of their organization; useful to them and useful to physicians as well, for no nurses are members of the Association unless they have graduated from a good and reputable institution and are in every way in good standing. It certainly should be up to the State Medical Society to encourage, in every way possible, the betterment of nursing and the perfecting of the nurses' organization. For this reason the JOURNAL again bespeaks your aid in helping the Nurses' Association and its Directory. Nurses are sent from the Directory not alone to patients in San Francisco, but to any portion of the state. In order to aid you in remembering to make use of the Central Directory, and that you may have a constant reminder of it and its whereabouts, you will find on the last cover page of the JOURNAL an announcement of the Directory and its address. Remember to look up the telephone number when you want a nurse.

#### CURIOUS CHANGES.

#### ENCOURAGE THE NURSES.



A casual perusal of the Report of the Committee on Social Betterment of the President's Homes Commission explains why such a loud howl went up when the report was presented to the Congress. Some fifty or sixty pages of this volume are devoted to nostrums, "patent medicines" and fake "cures," and this, quite naturally, was found objectionable to a number of our most honorable members of Congress who are interested, or whose friends are interested in many of these fakes. There are, for instance, 38 preparations listed which contain habit-forming drugs (opium, morphine, cocaine, etc.). A study of 1,217 families in the city of Washington disclosed the fact that they spent \$2,032.39 per annum for "patent or proprietary medicines" and from this it is deduced that not less than \$62,000,000 are spent annually in the United States for this purpose; which is no insignificant sum, by the way. We learn from the report that the patent office has issued, up to October 31st, 1908, 2,140 patents and 8,398 trademarks on drugs, chemicals and medical compounds. Referring to the Council on Pharmacy and Chemistry of the A. M. A., the report says: "*This Council has rendered, and will continue to render, most meritorious services to the cause of humanity.*" (And this is the work—these "meritorious services"—which the Proprietary Association, with the assistance of Lydston, of Chicago, is trying in every way to stop or undo.) The soothing syrups are given a dose of truth and a few deaths are cited; in passing, one but wonders if any Congressman is interested in soothing syrups. Diphtheria cures, drunk cures, consumption cures, catarrh cures, skin cures, rheumatism cures, cancer cures, epilepsy cures and abortifacients are given a most dignified, polite and official send off into the realms of fraud and criminality—and this from an official, government publication! Ye Gods and little fishes! No wonder that the honorable Congressmen howled! No wonder that there was a protest against the circulation of this report! No wonder, also that the files were exhausted within the first two days, that no more copies are to be had except those in the hands of the Commission. The work of the American Medical Association and the work of *Collier's Weekly* have at last received the endorsement of a special Commission appointed by the President of the United States. Does it matter much what the Lydstons or the Proprietary Associations have to say? Think about it.

#### NOTICE.

We are going to try to issue the Register and Directory in July, this year. Will you please send in your own or any other change of address known to you. The accuracy of the work largely depends upon the co-operation of the members.

You can do it for about sixty cents a volume. We are now ready to furnish any member with a good, practical binder in which each number of the **STATE JOURNAL** can be placed as it is received, and thus protected from wear and tear—and at the same time a binder which, at the end of the year, becomes a permanent binding of the most durable quality, merely by the application of a little paste or mucilage. Why not invest the sixty cents? The Society makes no profit on these; they have been secured for your benefit. The **STATE JOURNAL** contains all the official announcements of the State Society and its proceedings, and in addition the official reports, etc., of most of the county societies. This binder is in every way simple, easy to use and practical; it is also strong enough to withstand all ordinary wear for many years. Each number can be inserted in less than one minute; the whole volume can be closed up and made a solid, lasting binding, at the end of the year, in about the same amount of time. Send sixty cents to the **JOURNAL** office and we will mail you one of these binders with full instructions that a child could follow without difficulty. Bind your **JOURNALS**; you can do so for sixty cents.

#### ANTISEPSIS AND ASEPSIS IN SURGERY.\*

By W. W. BECKETT, M. D., Los Angeles.

From the wide range of subjects, for a brief address before this society, it seemed to me that I could select none more appropriate than the title of this paper.

Lister more than forty years ago first recognized and put into practice the principles which underlie all modern wound treatment.

In literature and in science there have been occasional startling and unforeseen bursts of progress. These epoch-making periods have not been confined to literature and science alone. There stand out in the past history of our art of surgery three great epochs. One was when Pare, a French barber-surgeon, about the middle of the sixteenth century substituted the ligature for the red-hot knife, the actual cautery and boiling oil; the second when Morton demonstrated that human beings could be painlessly operated upon under the influence of an anesthetic; and the third and greatest when Lister introduced the antiseptic principle in wound treatment.

Lucas Championniere was right when he said that there are only two periods in surgery. One before Lister and one after Lister.

Antiseptic surgery has been defined as surgery directed against sepsis, or against septic organisms, which have already entered the wound, the aim being the eradication of these organisms from the wound; and aseptic surgery as surgery in which means were taken to prevent the entrance of pathogenic organisms into the wound. We now employ these terms—"Antiseptic" and "Aseptic" surgery quite differently—antiseptic surgery being methods of wound

\* President's Address, Thirty-Ninth Session of the State Society, San Jose, April, 1909.



treatment in which antiseptics are used and aseptic surgery being methods where no antiseptics are used.

Before Lister had commenced his bacteriological work in connection with antiseptics, medicants used in wound treatment had been used more or less empirically, believing that the union depended upon the virtues of the balsams, lotions, liniments, ointments and other local applications. Lister based his treatment of wounds upon the researches on fermentation by Pasteur. Carbolic acid at this time was used as a local dressing for wounds to lessen the discharge and fetor of suppurating surfaces. Lister taught that its beneficial influence was due to its germicidal action, and its consequent power against the sources of disturbances which existed in the dust of the surrounding air.

It is hard to realize the changes brought about by antiseptic and aseptic surgery. The terrors of the surgical practice of those former days, before Lister, such as unavoidable suppuration, pyemia, septicemia, erysipelas, tetanus and hospital gangrene, are so rare now, that some of them, notably hospital gangrene, can now safely be said to not exist. It is said that in those pre-Listerian days eighty per cent of all wounds treated in Nussbaum's clinic in Munich were attacked with hospital gangrene. Erysipelas was a common occurrence. Open wounds were not sutured lest the retention should encourage erysipelas. Healing by primary union did not exist. Eleven out of seventeen patients subjected to amputation died of pyemia. It was customary to perform amputation immediately for compound fractures, otherwise purulent infection, hospital gangrene, or septicemia led to a fatal termination in a few days. The usual rate of mortality in compound fracture was forty per cent. In St. Petersburg the mortality rate reached sixty-eight per cent. In major amputations the mortality was about thirty-three per cent. The operating room was frequently crowded with students fresh from the dissecting-room. Each ward has its set of sponges, and these were used indiscriminately for dressing the wounds, and at the operating table. There was no such thing as absorbent cotton in those days. Lint was used instead. Linseed meal and charcoal poultices were used to cleanse and sweeten wounds and to promote "healthy suppuration." "Laudable pus" was a sign of a healthy condition of the wound. Stout silk ligatures were employed to tie blood-vessels and were left hanging out of the wound to be pulled at from time to time until they were separated by the process of suppuration. What a change has taken place since that time. Dennis reports one thousand cases of compound fracture treated by himself with a mortality of less than one-half of one per cent. The death rate from sepsis in clean cases, in our best hospitals, is to-day almost nil.

The doctrine of the four elements, earth, air, fire and water, constituted the sole dictum of the ancient philosophy which under the designations of heat, coldness, dryness and moisture were thought to explain the various phenomena of disease. Air was supposed to play the most important part in

the production of disease. Hippocrates taught that air entered the different cavities of the body and produced pain and every known malady. According to Hippocrates, the gas expelled from the stomach was nothing more nor less than atmospheric air. The same air when charged with miasm might enter the system and poison it, giving rise to many diseased conditions. The difficulty of healing all open wounds he considered to be due to the coldness of air. Magnatus as early as 1576 advanced the view, that the air was charged with miasms which infected every part of the human system wherever they might find entrance. He noticed if a hole was made in the end of a new-laid egg through which air was permitted to enter, the contents of the egg was sure to undergo putrefaction. From this simple experiment he argued that the inflammation and suppuration seen in all open wounds was due to their exposure to the open air. He did not specify any particular constituent of the atmosphere, but thought the air was the carrier of the poison. Ambrose Paré called attention to the poisonous properties of the air of sick-rooms and camps. That atmospheric air caused all the trouble in external wounds became the recognized belief of the day, and from that time on the chief care of the surgeon was to exclude the air from all such injuries as much as possible. Surgeons had recognized the fact that simple fractures, dislocations and all wounds where the surface remained unbroken, healed very rapidly, with little inconvenience and small risk to life, while in compound fractures and where the air had free access to the injury, inflammation and suppuration were sure to follow. In 1783 Benjamin Bell, an English surgeon, first drew attention to the evil effects of admitting air into open abscess cavities, and advised the use of drainage tubes for evacuating their contents, without permitting the ingress of air. Delacroix improved on the method of Bell by inventing the aspirator. John Hunter, the celebrated Scotch surgeon, considered that the healing of wounds by scabbing was the natural process. Many mechanical appliances were used to assist Nature in this scabbing process. Layers of cotton, dried blood, anything that would cover the wound and exclude the air was made use of. Lister in his search for some satisfactory substitute for this natural process of scabbing was led to discover the true principle of antiseptic surgery. He first used lint saturated with carbolic acid and blood to form a coating over the surface of the wound. Sheets of lead or block tin were firmly fixed over the application to prevent the evaporation of the carbolic acid.

Before the invention of the microscope it was impossible to determine whether or not the air contained any living organisms. Pasteur in 1857, after a series of brilliant experiments, established the fact that it was not the air as a whole or any of its constituent parts which disturbed the healing process of wounds, but minute living organisms conveyed by the air.

Other eminent men through varied experiments confirmed the conclusion of Pasteur. In 1867 Sir

Joseph Lister first published his procedure in the treatment of open wounds by the new or antiseptic method. In March of the following year Lister began to treat wounds by this new method. His first cases did not come up to his expectations, yet he did not become discouraged, but continued the treatment with more care and was soon able to prove that by this method of treatment of compound fractures, the danger from subsequent supuration was not only obviated, but a cure was hastened. He also extended this form of treatment to abscesses. His object was to evacuate the pus without admitting air. He prepared a twenty-five per cent solution of carbolic acid and boiled linseed oil. With a bistoury whose blade had been dipped in this solution, he opened the abscess. A piece of cloth which had been saturated with this carbolic oil was placed over the opening and the contents of the abscess pressed out beneath the cloth. After the hemorrhage was checked, a piece of lint saturated with the antiseptic oil was placed as a drain through the opening into the abscess. The wound was dressed so as to exclude the air and to promote the process of scabbing. This treatment was followed in incised, punctured, lacerated and contused wounds, and finally to amputations and all the different branches of operative surgery. Professor Paget, a distinguished contemporary, said: "The covering of a wound, as in a compound fracture, with material soaked in a solution of carbolic acid, excludes all the external air, or at least those organic materials in it that would be injurious. Thus the wound is rendered practically airtight and may heal without suppuration, simply by scabbing over."

Lister had two objects in view, to keep the morbid organisms in the air from coming in contact with the wound, and to destroy those that had already found entrance. This was the last step in the evolution of antiseptic surgery.

Buried ligatures were first used in 1867. Lister first experimented by tying the left carotid artery of a horse with silk which had been steeped in a strong solution of carbolic acid, the ends cut short and the wound dressed antiseptically. Healing occurred without suppuration. Six weeks afterwards the horse died and the parts were examined. The vessel was completely cicatrized. A few weeks afterwards he tied the external iliac artery in an old lady suffering from an aneurysm of the femoral artery. In this case he used silk soaked in carbolic acid. The wound healed primarily. At autopsy about one year after, the knot was still present, enclosed in a thin walled capsule. The use of animal ligatures was next tried. Leather catgut and tendon had been used and abandoned, but it was hoped with antiseptic methods better results might be obtained. In 1868 Lister ligated the right carotid of a calf with catgut that had been soaked in carbolic acid for four hours. The wound healed by first intention. A month later the calf was killed. On dissection the catgut was found to be absorbed.

Following out the same antiseptic principle, the carbolic acid spray was used to avoid the risk of

air infection. About the same time antiseptic gauze was used for dressings, and rubber drainage tubes were employed. From this time on there was a gradual advance up to the present methods of wound treatment.

The excessive use of antiseptics and moist dressings produced a great deal of wound irritation and proved in many cases to be very unsatisfactory. This soon led to sterilization by heat and the use of dry sterilized gauze for dressings. Lister was probably the first to use dressings sterilized by heat. Lister, till he gave up operating in 1896, continued the same method of skin sterilization that he had adopted thirty years before. This consisted in washing the skin just before the operation with a 1 to 20 watery solution of carbolic acid. He used a 5 per cent solution of carbolic acid for hand disinfection and for the sterilization of instruments. The instruments were placed in this solution just before the administration of the anesthetic. These are very simple methods when we compare them with the technic which is now in general use. To attain the best results it is necessary to have a well-appointed hospital and a permanent staff of assistants. Then a definite system can be carried out, and in a large series of consecutive cases, if the results are not satisfactory, it is possible to locate the cause of failure and to make such changes as may be necessary to bring about better results. The more simple the method the better, if it is effectual. As far as possible there should be a uniform system practiced by the surgeon, assistants and nurses. It is only in well-appointed hospitals that this can be carried out. The surgeon is to a great extent dependent upon the care and thoroughness with which others do their work. He cannot supervise every detail. He is at the mercy of those in subordinate positions, whose lack of knowledge or carelessness may defeat his best endeavors. He must take for granted that their work is carefully and scrupulously done.

Aerial infection has been a much-discussed subject from the time Lister introduced his carbolic spray to the present time. As to the danger of air infection, there is a difference of opinion on the part of those who have investigated the subject.

Investigations made of surgical amphitheatres of different hospitals by the exposure of Petri plates do not differ materially as to the variety and number of bacteria present in the air. They all show that air infection is a possible danger and should not be disregarded.

It has been recently stated that sweat is never sterile, yet it has been demonstrated by Harrington that sweat made to flow from well cleaned, and as far as possible, sterilized hands and forearms, encased in sterile glass cylinders, and heated by appropriate means, that not in a single instance could a bacterial growth be obtained.

There is much greater danger through saliva from talking into the wound. Dr. Charles Harrington says: "The mouth cavity is a singularly unclean place, for the secretions of the mouth are

likely to be richer in bacteria than the foulest sewage, and they may be exceedingly virulent."

The details for aseptic operations vary according to the ideas of the individual surgeon. The following are the methods we have pursued during the past several years. Street clothes are removed in dressing rooms and replaced by duck suits and tennis shoes. Everything that is brought into the operating room is sterilized either by boiling or steam heat under pressure. Gauze dressings, sponges, pads, gowns, sleeves, towels, sheets and caps are exposed in a steam sterilizer at eighteen pounds pressure for three-fourths of an hour. Sterile catgut and kangaroo tendon are purchased from some reliable dealer. The floor of the operating room is thoroughly mopped and the walls, furniture and fixtures wiped with moist cloths. The operating room is thoroughly fumigated with formalin after septic cases. Draughts are minimized. Septic material is thrown into a well-trapped hopper with sufficient disinfectants. Clean cases always precede septic ones.

The patient, the day before operation, is given a full warm bath and the operating area is shaved and thoroughly cleansed with soap and water. Sterile gauze is used instead of a brush for this purpose. A sterile gauze pad is placed over the seat of operation and held in place by a suitable bandage. When the patient is placed on the operating table, the operating area is thoroughly sponged with Harrington's solution and then gently scrubbed with alcohol. The hands and arms of surgeon and assistants are thoroughly scrubbed with hot running sterile water and soap; sterile gauze being used for scrubbing instead of a brush. Nails are trimmed and cleaned and hands again washed until satisfied they are clean. They are then immersed in Harrington's solution for about thirty seconds and then rinsed in alcohol. Next they are rinsed with a bichlorid solution, 1 to 5000, and the gloves put on. Thin rubber gloves are used in all operations and for dressing wounds. The gloves are sterilized by boiling or by steam heat under pressure. Gloves undoubtedly lessen the danger of infection and prevent the hands from becoming soiled with septic material. Silk wormgut, silk, pagenstecher thread, wire, and all instruments, except cutting instruments, are sterilized by boiling for ten minutes. Edged instruments and needles are immersed in lysol for ten minutes. Caps are worn to prevent dust, dandruff and bacteria from being brushed off into the wound. Sleeves are pinned to the gown and a sterile towel over the front of the gown. These are changed after each operation. Gauze is worn over the nose and mouth. The hands and instruments are frequently washed in warm sterilized salt solution during the operation. All drains are sterilized by boiling, except rubber tissue, which is soaked in bichloride 1 to 1000 and afterward washed off with sterile salt solution.

Great care is taken in the cleansing of all open wounds, especially those of compound fractures. The skin surrounding the wound is thoroughly scrubbed with soap and sterile water, then sponged

with Harrington's solution and washed off with alcohol. The wound is washed out with sterile salt solution, all foreign substances removed and then thoroughly washed with a 10 per cent solution of lysol; the bleeding checked so as to leave the wound as dry as possible and the wound closed. Drainage is employed if there is any oozing or where cavities exist. Abscesses are drained and the cavities filled with a two per cent solution of formalin in glycerin.

In clean cases the wound is dressed with dry sterilized gauze, which is held in place with adhesive plaster or suitable bandages. The wound is dressed the fourth day and the superficial stitches removed. The retaining sutures are removed the eighth day.

We realize that these methods are not perfect, but if they are religiously carried out, good results will be obtained.

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#### AMEBIC DYSENTERY.\*

By J. D. LONG, Passed Assistant Surgeon U. S. P. H. & M. H. S.

Heretofore Amebic Dysentery has been considered almost entirely a disease of tropical countries; it is true that during the past ten years, isolated cases have been reported by observers in various portions of the United States, e. g., Baltimore, Chicago, St. Louis, New Orleans and also in Montreal, Canada, and while it seemed to the observers that these cases had in some unexplainable way originated in the cities where found, there still lingered the feeling that they had really in a more or less roundabout way gotten their infection from the tropics.

In 1907 while on duty at the U. S. Marine Hospital, the writer found three cases of dysentery which, as far as could be determined from the history of the cases, originated in San Francisco or vicinity; the thought then occurred that probably the disease had secured a foothold here, on account of the large number of persons arriving here each year from countries where the disease is known to be endemic. Before it was possible to study the matter further, other duties intervened and the matter was dropped till last year.

About December 1, 1908, a case of dysentery was admitted to the hospital in a man who had lived continuously in San Francisco and vicinity for a number of years. His symptoms had lasted for less than two years. Routine examination of stools was then begun, with the result that since December 1, 1908, a total of forty (40) cases of dysentery have been found, in all these cases living motile amebae have been demonstrated in the stools, and in some cases other parasites, e. g., *trichocephalus dispar*, un-

\* Read at the Thirty-Ninth Annual Meeting of the State Society, San Jose, April, 1909.



cinaria, anguillula stercoralis, ascaris lumbricoides, trichomonas and cercamonas intestinalis, taenia saginata, and bothriocepholus lotus.

Out of the total number of forty (40) cases fourteen (14) have so far as we can determine originated in this country. One case had never been outside of the State of California; others had been here for periods of from five to twenty-seven years and during these periods had not been outside of the United States except on vessels plying between ports on the Pacific Coast. It is possible that some of these cases were infected in tropical countries, and that some of the others were infected here, as any patient who had been in tropical country within three or four years, was considered to have been infected there.

As a result of observation made during the plague campaign, and as a result of almost six years' experience in the Philippine Islands, with opportunities for observation of agricultural methods in Singapore, China and Japan, I have no hesitation in saying that dysentery has obtained a foothold here. As you all know the vegetable gardens are in the hands of and under the control of Chinese, Japanese and Italians; the Chinese and Japanese at least are aware of the fact that human excrement makes an excellent fertilizer, by mixing it with water and sprinkling it from an ordinary sprinkling can over the tops of the growing vegetables. In the Philippines we used to find in the huts of the Chinese gardeners a jar in which was carefully collected the urine and fecal matter of the gardener and such assistants as he might have. Inasmuch as a large percentage of Chinese, Japanese, Filipinos, etc., have dysentery it may readily be seen how the disease could be distributed. Musgrave produced typical Amebic dysentery with abscess of the liver in a monkey which had been fed on a culture made from the fifth water that had been used to wash a bunch of lettuce. There are not many cooks who wash lettuce, watercress or celery five times in as many changes of water.

Further, amebae have been cultured from lettuce grown in this vicinity; also from tap water and from the water collected from a small creek. Whether they were pathogenic amebae or not was not demonstrated; they were morphologically not to be distinguished from the amebae found in stools, and it is claimed by Musgrave, that any type of ameba may become pathogenic with appropriate environment.

The question is of vital importance to state and country and more detailed investigations should be made for the purpose of determining exactly where the infection lies and how it can be most quickly corrected.

Examination of the chemical analyses of the potable waters of this region shows a fairly high content of organic matter. A very small amount of organic matter is needed in the artificial cultivation of amebae, only .2 gram of beef extract to the liter, hence a few cases of dysentery on a watershed might be responsible for a good many more among the users of the water.

The cases presented varying symptoms, a few

only had diarrhoea, or mucous and bloody stools, probably over half gave symptoms of constipation, some came in with slight jaundice, fever from 101°-104°, pain in region of liver, and a more or less marked increase in the area of liver dulness.

Two had abscess of the liver on admission and died later on; one of these was infected in San Francisco.

I believe that an examination of the stool will clear up the diagnosis of many a case presenting symptoms of gastric or intestinal disturbance, obstinate or recurring constipation, jaundice, hepatitis, etc.

The treatment consists in the daily administration of quinine enemata, beginning with a 1-8000 solution and gradually increasing the strength and quantity until two liters of a 1-500 solution are taken once daily, if there is fever, enlarged liver, jaundice and a leukocyte count of from 15,000 to 25,000 with the polymorphonuclears running between 75% and 85%, we have been using ipecac in thirty grain doses daily, administered in salol coated capsules, with excellent success.

In favorable and uncomplicated cases two months at least of treatment are required; the treatment may then be stopped and if daily examination of liquid stools for ten days or two weeks show no amebae, the case is probably cured.

The matter of eradication and prevention is an extremely important one and may be best divided into several groups:

- 1st, Legislation. Legislation should be enacted making it an offense punishable by imprisonment without the alternative of a fine for any one owning, controlling or managing a vegetable garden to use human feces, or urine in any manner as a fertilizer, each succeeding offense to be punished with increasing severity.

- 2nd, Inspection. All gardens, truck farms, etc., growing or producing vegetables for sale for human consumption should be rigidly inspected sufficiently often to see that no human excrement is used as a fertilizer and licenses should be issued to the persons controlling the gardens, all cases or crates containing their produce for shipment to have the number of their license upon it, so that if the City Bacteriologist should find amebae or other pathogenic organisms on said vegetables, the garden where they were grown would be known and could be investigated.

3. Education of the people—that fresh vegetables should not be eaten unless very thoroughly cleaned or cooked, and that drinking water be boiled; filtration will not serve as amebae grow through filters sooner or later.

4. Inspections of watersheds to be made and all sources of possible infection to be removed therefrom. It may be that before many years methods of purifying water will be found, whose cost is not prohibitive and the question thus be solved. French writers are now claiming great things from ozone at a cost of about \$14.00 per million gallons.

5. An effective and satisfactory way of disposing of sewage, so that it will be rendered incapable

of producing disease. In a country like this which might be considered as semi-tropical, where frost seldom and snow never comes, the septic tank properly constructed and managed, offers a possible solution, probably not much, if any, more expensive than the present sewage systems, with the advantage that the sewage when it reaches water courses or the ocean can produce no disease of any kind.

It may seem to some that some of the statements made above, are overdrawn and improbable, and that it is not necessary to take the precautions recommended. In reply it can be stated that it is true that all cases of amebic dysentery do not die of the disease, nor do all cases have abscess of the liver, but these facts do remain, the vitality of anyone having dysentery is so lowered as to make the patient very susceptible to intercurrent disease, particularly tuberculosis. We find tubercular processes quite frequently at autopsies on dysenterics. Further, should the disease get a firm foothold it will be as difficult to eradicate as is tuberculosis. Personally, if quick results were desired, I would much prefer to handle an epidemic of Asiatic cholera, plague or smallpox, or any two of these, than to attempt to eradicate amebic dysentery in anything like a reasonable time.

#### LATENT TUBERCULOSIS: ITS SYMPTOMS, TREATMENT AND PROGNOSIS.\*

By DR. MAX ROTHSCILD, San Francisco.

The attention of the general practitioner ought to be called to a complex of symptoms which is not generally well enough known,—the latent tuberculosis. It might be advisable to give first the history of a number of typical cases that have been under the writer's observation during the last 6 or 8 years, then to give a résumé of these and other similar cases that have been under treatment and afterwards to give a short description of the mode of treatment which seems most efficacious.

Case 1: Miss A., San Francisco. Stenographer, aged 24. One cousin and one aunt died of tuberculosis. Patient herself has never been sick with the exception of children's diseases. Menstruation regular with normal loss of blood. Patient complains of tired feeling and general exhaustion which appears even after very light work. It is the greatest effort for her to perform the duties of her position. She wakes in the morning without feeling rested or refreshed and is so tired in the evening that she can scarcely wait to get through with her dinner so that she may get to bed. No expectoration, no cough, no night sweats, no shortness of breath.

P. C. Patient looks rather delicate, has deep, dark rings under her eyes. The mucous membranes look rather pale. She is well developed, heart normal, lungs normal with the exception of some interrupted breathing in right and left lower lobes. Liver, spleen and kidneys normal. Digestion normal. Blood shows about 80% hemoglobin, about 4,200,000 reds and a normal amount of white cells. Pirquet and Moro reactions both positive. While the temperature of the patient is usually normal and most of the time sub-normal in the early morning, patient had a temperature of 99.8° about 24 hours after an

intravenous injection of 1-3 mgr. of Koch's old tuberculin.

Diagnosis, latent tuberculosis.

Treatment, Bland's pills internally, intravenous injections of tuberculin and atoxyl twice weekly beginning with 1-5 mgr. of tuberculin and increasing to 1 mgr.

After about three months' treatments patient had gained 18 pounds, general condition much improved, the fatigue having entirely disappeared.

Case 2: Mr. B., Portland. Real estate dealer. Thirty years of age. Referred by Dr. Weeks. Father and sister died of tuberculosis. Best weight of patient was 162 pounds. In the last 3 or 4 years he has gradually lost in weight, now weighing 140 pounds. Patient has no outspoken symptoms of any kind. He "just feels tired and lazy," as he expresses it, with no desire to work and great exhaustion after any efforts of any kind, physical as well as mental.

Examination shows a well built man with rather pale mucous membranes. With the exception of harsh expiratory breathing over the right apex and a light anemic condition (hemoglobin about 80 to 85%) patient appears to be perfectly normal. Moro reaction positive. Twenty hours after an injection of 1-3 mgr. of tuberculin intravenously, temperature 100.2°.

Diagnosis, latent tuberculosis.

Treatment consisted, as in all similar cases, of intravenous injections of tuberculin and atoxyl. Patient gained 20 pounds in four months, then he returned to Portland where he has been working hard ever since. He is perfectly well and enjoying better health than he has for many years.

All cases of latent tuberculosis that have been treated by me, altogether 22 in the last 6 years, showed about the same picture and reacted in the same way to treatment. The symptoms in all cases are very much alike. The prominent features are,—

1st, tuberculosis hereditary in the family.

2nd, exhaustion more or less pronounced after light physical efforts of any kind without any other apparent cause.

3rd, positive Moro reaction, or reaction after an injection of tuberculin of sufficient strength.

4th, light anemic condition. Sometimes interrupted breathing or harshness on auscultation of the whispering voice over some part of the lung.

5th, patients have either lost in weight or are far below the weight which persons of their respective sizes should normally have.

In most cases of latent tuberculosis, the Moro reaction is sufficient for diagnostic purposes and if this reaction is positive an injection of tuberculin will not be necessary for diagnostic purposes. The Pirquet gives the same results as the Moro reaction. It is most interesting that in cases of real latent tuberculosis, the Calmette reaction is usually negative. If this reaction should be positive we have usually to do with a case of active tuberculosis, and so it seems to be possible to draw a line, with the help of these reactions, between the cases of latent tuberculosis and the cases of incipient tuberculosis. My results harmonize with those published by Wolff-Eisner; however, these reactions have to be studied a good deal longer before positive facts can be stated in this respect.

The effect of tuberculin treatment in cases of latent tuberculosis resembles very much the effect

\* Read at the Thirty-Ninth Annual Meeting of the State Society, San Jose, April, 1909.

of a good tonic. I have given to some patients, who have suffered from a light anemia without the hereditary element of tuberculosis in the family history, and without a positive Moro reaction, or a reaction after an injection of tuberculin, tuberculin intravenously, but there was no result from the treatment and in some of my cases of latent tuberculosis I have given for a while intravenous injections of atoxyl alone, without a marked improvement which became very evident as soon as I had added tuberculin to the atoxyl. It is needless to say that in the treatment of latent tuberculosis proper food and a proper mode of living are important. The patients have to combine rest with a certain amount of exercise in the open air. They ought to sleep outside or use a window tent. The best and quickest results are obtained if the patients are treated exactly as though they were suffering from an incipient tuberculosis; only the amount of tuberculin should be larger and should be increased more rapidly.

In regard to the prognosis of latent tuberculosis, it is possible that with a proper mode of living and good care, the sickness may disappear. On the other hand, and this is usually the case, an active tuberculosis develops sooner or later and then of course, it means a harder fight for patient as well as for the physician. The Moro ointment ought to be on hand in the office of every physician, the test is so simple and can be made so easily. Since the reading of a paper on this subject by Dr. Alderson and myself at the November meeting of last year of the San Francisco County Medical Society, a great many publications on the value of the Moro reaction have appeared, and all writers recognize now the importance of this test.

So, if a patient comes for examination with the symptoms mentioned, especially with an element of hereditary tuberculosis in the history, a Moro test ought to be made. With the exception of one single case that was observed by Dr. McClennahan of Belmont, I have not heard or read of any case in which general symptoms appeared after a Moro reaction. The method is practically harmless. It is needless to state that the diagnosis of latent tuberculosis is of the greatest importance, as well for the individual in question as for the community at large.

#### Discussion.

Dr. Harry E. Alderson, San Francisco. Regarding the query made by the gentleman who last spoke in discussing Dr. Rothschild's most interesting paper, I wish to say that unsatisfactory results with the tuberculin salve may be due to various causes. The salve must be fresh and it must be kept cool. It is well to keep it in a refrigerator. After six weeks it loses much of its effectiveness. That prepared by Mulford & Co. and the Cutter Laboratory have been very satisfactory. Any reliable pharmacist will make a good tuberculin salve. One difficulty is that the so-called "anhydrous lanolin" as dispensed by different druggists, varies greatly in quality. It must be a good, pure preparation, and the Koch's old tuberculin must be thoroughly rubbed up in it,—at least one-half hour's work being necessary. As for recognizing the skin phenomenon, mistakes are made in overlooking slight reactions. Often a reac-

tion will consist of but two or three papules, and these are not always easy to recognize. The individual papule is usually slightly larger than a pin head, acuminate and pale and often a lanugo hair can be seen at its apex. Sooner or later a tiny crust usually appears on its summit. At times the papules are larger, more rounded and edematous, resembling small urticarial lesions. The reaction appears within forty-eight hours and sometimes before thirty-six hours. Sometimes it is quite lively and consists of one hundred or so papules on an inflammatory base. The lesions gradually fade away, passing through the various shades of yellow in about ten days but occasionally the process lasts twice as long. Sometimes it results finally in marked desquamation.

### A DOSIMETRIC METHOD OF ANESTHESIA BY INHALATION.\*

By CARL R. KRONE, M. D., Oakland.

The first efforts at dosimetry in inhalation anesthesia were made by Dr. Oscar H. Allis of Philadelphia in 1874 when he described his ether inhaler in the *Philadelphia Medical Times*. Still clearer did he establish his standpoint in an article on Anesthetics and Anesthesia which appeared in 1891 in the *Cyclopedia of the Diseases of Children*, edited by John M. Keating, M. D., first edition, third volume, pages 915 f. f. I quote: "When I administer chloroform and accomplish the desired effect in four minutes, when I consider that in this time there have probably been but sixty full respirations and that I have used but sixty minims of chloroform, then it is that I realize the value of a minim of the agent;—a single minim properly administered has definite anesthetic value." So far Allis.

In 1891 when I was in, and just fresh from, medical college the article quoted made so deep an impression on me that I determined to follow its teachings. I strenuously adhered to the principles laid down by Allis in the following eighteen years of the practice of inhalation anesthesia. I found it not a simple matter to determine the "definite anesthetic value of a minim of chloroform."

A dosimetric method of general anesthesia by inhalation must fill the following requirements:

1. This method must offer a means by which chloroform and ether can be subdivided into smallest parts without loss from evaporation. The subdivision of the agent must be under ready control so that the smallest convenient parts (drops) can be exhibited at accurate time intervals.
2. Chloroform and ether can be inhaled only in the form of vapor suitably mixed with air; therefore means for evaporation and for admixture of air or oxygen must be introduced. The method must provide apparatus whereby the vapors derived from definite quantities of the liquids may be transferred into the airpassages without loss.
3. A scale for ascertaining progressive degrees of anesthesia must be arranged.
4. Absolute accuracy in the foregoing requirements being impossible, approximate results can be

\* Read at the Thirty-Ninth Annual Meeting of the State Society, San Jose, April, 1909.



deducted only from observations made in a series of consecutive experiments.

Ad 1. The first requirement I met by devising a combination measuring and dropping cylinder. For chloroform this cylinder holds 25 c.c. and 0.25 c.c. can be accurately estimated. For ether I use a 50 c.c. cylinder on which 0.5 c.c. can be accurately estimated. It is necessary that there should be a space of 5 c.c. for the small cylinder and of 15 c.c. for the ether cylinder above the measuring column. The dropping stopper consists of a cork perforated by a seamless brass canula of smallest size ( $1/16''$ ), which as it leaves the cork is bent off at an angle of 30 degrees. By placing this cork into the mouth of the filled measuring cylinder and inclining the latter at an angle of from 30 to 60 degrees from the horizontal it is relatively easy to drop at will equal individual drops of chloroform and ether from the end of the canula by varying the inclined position of the cylinder. After a few drops have been issued in this manner the dropping ceases in accordance with well known physical laws. Air can be admitted to the interior of the cylinder by holding it a little more horizontally when one or more airbubbles enter by the canula and pass through the chloroform column into the elevated part of the cylinder; after this dropping can be resumed.

Ad 2. Requirement two was met by the use, in chloroform anesthesia, of what I called a "headpiece" and a "facepiece." The headpiece consists of a towel not less than 26" long by 16" wide, folded in four layers lengthwise, and fastened around the head so as to cover the eyes and the tip of the nose with its lower margin and the forehead above. By this headpiece two preorbital nasolateral spaces are included, which are left open only below toward the mouth. The facepiece, 8" by 5" is made from No. 1 absorbent gauze, 8" by 20", folded in four layers. It is laid over the lower exposed part of the face, its upper margin resting upon the lower margin of the headpiece and its lower margin supported by the chin, while laterally it applies itself closely to the contours of the cheeks. Thus placed the facepiece defines a preoral subnasal space or breathing chamber, it serves as a perfect evaporating surface for chloroform and small tonic quantities of ether, and permits the exchange of fresh and exhaled air. A glass delivery tube, introduced under it, provides for a continuous low pressure current of oxygen from a washbottle and tank, which current can be regulated by opening the tank faucet just wide enough to pass 40 to 60 oxygen bubbles through the washbottle. As far as I know I am the first to thus automatically and constantly supply low pressure oxygen directly to the breathing chamber and keeping the patient independent of the vitiated atmosphere of the operating room. I think it proper here to mention that the passages from the breathing chamber to the larynx must be kept free from mechanical obstruction by mucus and also patulous; this can be accomplished by the continuous use of a suitably placed mouthgag and the support of the lower jaw against it, the suspension of the tongue with tongue forceps, rarely,

or its support by a lateral prone position of the head, in all instances.

The insufflation method is the only one by which vapors derived from definite quantities of ether can be transferred without loss into the air passages. My apparatus consists of a 100 c.c.m. cylinder on which 0.5 c.c.m. can be accurately estimated. The mouth of the cylinder is closed with a rubber stopper perforated by two metal tubes. One canula goes just through the stopper and serves for the exit of the ether vapor, the other serves as a sleeve for a long movable canula. Through this long movable canula air is introduced forcibly with an atomizer bulb of suitable dimensions. To make vapors from definite quantities of ether it is only necessary to blow the air through and read off from the scale the amounts evaporated during the unit of time, say every five minutes. The rapidity of evaporating can be regulated by allowing the air to merely pass over the surface for minimal amounts; when higher vapor densities are required the canula is lowered into the liquid deep enough to cause more evaporation by the more forcible agitation of the liquid. A rubber sleeve holds the canula in any position required. In order to transfer the vapor into the air passages and mix it on its way with oxygen I attach the delivery canula to one leg of a metal Y-tube. To the twin leg of the same Y-tube the delivery tube from the oxygen wash bottle is attached. To the third leg a rubber tube is affixed which conducts the mixed vapors into the naso-pharynx of the patient by way of the nostril through a bent glass tube and rubber catheter of suitable size and length. It is evident that with this apparatus waste can be avoided provided care is taken to introduce the vapor during inspiration and no more of it than can pass into the lungs in one inspiratory period. If it is desirable to administer the vapor warm it may be passed through a metal coil tube and the latter immersed in a vessel of warmed water.

Ad 3. I suggest a progressive scale of five degrees of anesthesia but time restriction permits only their enumeration.

- Status tolerans.
- Status somnolens.
- Status anaestheticus.
- Status narcosis.
- Status comae.

The first three only are useful in practice, the last two must be avoided.

Ad 4. For my last 300 cases I adopted a uniform method of recording and also a special averaging sheet. Readings are recorded every five minutes. I have found it safe and convenient to produce the somnolent stage in five minutes and the stage of surgical anesthesia in ten minutes. By increasing the vapor density very guardedly and slowly at first I succeeded in almost entirely avoiding a state of excitement. By averaging the records I find that the following doses are normal:

Somnolence in one period (of 5 minutes) was induced with 1.50 c.c.

Anesthesia in two periods (of 5 minutes) was induced with 4 to 5 c.c.

Anesthesia was maintained for one hour with 1.75 c.c. per period.

Anaesthesia was maintained for two hours with 1.50 c.c. per period of chloroform.

Anaesthesia was maintained for one hour with 15.00 c.c. per period of ether when evaporated from an Allis inhaler.

Anesthesia was maintained for one hour with 8.60 c.c. per period of ether when evaporated in my insufflation apparatus.

Oxygen was always administered by my low pressure continuous method except when it could not be provided.

Untoward chloroform effects did not occur, pneumonia never followed, vomiting was greatly reduced and seemed to follow the hypodermic administration of morphin, codein or heroin after the anesthesia. In over 5000 cases I have induced anesthesia with chloroform and had not a single immediate chloroform death, and no death from chloroform within three days in which the condition of sepsis or severe surgical shock was not also a determining factor.

I firmly believe that chloroform is safe when given by my dosimetric method when not more than 6.00 c.c. are given in any two consecutive five minute periods. When surgical anesthesia can not be maintained with that amount, ether should be administered by my insufflation method.

I furthermore solemnly declare that any intelligent person can learn to administer chloroform and ether safely if he will use my methods and follow my directions in 100 cases.

### OSTEO-ARTHRITIS.\*

By S. J. HUNKIN, M. D., San Francisco.

It is with some trepidation that I offer for your consideration the subject of osteo-arthritis, and especially the particular form of osteo-arthritis, which most frequently attacks the vertebræ, the sacro-iliac joints and the hips. It is a subject, however, of vast interest to the general practitioner, although it receives but scant attention from him. I repeat that it is, or rather should be of vast interest, for it is so common an ailment that it occurs almost daily in the practice of each one. As an illustration of its frequency, it is safe to state that the great majority of all sciaticas, outside of the cord cases, are osteo-arthritic in origin, that probably most lumbagoes and possibly most neuralgias are due to the same cause, and that most chronic joint troubles which are non-tuberculous, have a similar etiology.

Before being able to discuss the subject to any purpose, it is necessary that we have a somewhat clear understanding of the terms used. While, at present, I am not familiar with any classification which is as lucid as we would desire, still, the partial classification of Goldthwaite offers, at least, an outlook, a platform from which we may observe, and it is simply as an aid to our mutual understanding that I call it to your attention.

Goldthwaite's classification of chronic non-tubercular joint diseases describes five special types:

1. Villous arthritis.
2. Atrophic arthritis.
3. Hypertrophic arthritis.
4. Infectious arthritis.
5. Chronic gout.

Villous arthritis is a condition seen so often accompanying, and a part of, so varied a pathology and arising from so many causes that one looks upon it as a very possible concomitant of any lamed joint. We see it in the hip with tuberculosis, in the ankle after repeated sprains and in the knee with weak feet.

Of chronic gout I have seen little and know little. Instances seldom come under my observation.

The disease being considered then would include in the above classification both the atrophic and the hypertrophic types and to some extent, perhaps, would lap over into the infectious group.

To return then to the osteo-arthritis at issue. In the larger joints this is usually of the hypertrophic type, although the types are often concomitant. The various forms may often be noted in the different parts of the same joint. When not in the same joint, it may be seen in some other joints of the same patient, so the difference of type is not so real as it appears from the classification. Generally speaking, the hypertrophic form develops in the larger joints by preference, while the atrophic form attacks, by choice, the smaller joints. There is no definite rule, however, some of the most typical hypertrophic nodes, appearing in the fingers. In the typical form of hypertrophic osteo-arthritis, as it appears in the hips and in the spine, the edges of the articular cartilages thicken, soften, enlarge, proliferate and later ossify. In this manner, nodes, ridges, spurs or osteophytes are formed. The ossification spreads often by recurrent attacks, extends to and takes in more and more of the ligaments and fibrous structures. The nodes impinge on and, perhaps, interlock with each other and rarely so melt, as it were, into one another, and so extend along and around the ligaments and fibrous tissues, that a bridge of bone develops and true bony ankylosis results. Such bony outcroppings can be readily felt around many joints, and in and around many others are evident in the X-Ray plate. Radiograms, demonstrating these conditions, are offered for your examination. The skeletal changes presented are so definite that they can not be confounded with the lesions shown in the plates of tuberculous joints, or in those of rheumatism, specimens of which are also offered, labeled, for comparison and differentiation.

To give the term rheumatism to conditions presenting such bony changes is a sad misnomer and to designate pains, provoked by the impingement of nodes upon one another, or on nerve roots, or on nerve trunks rheumatic is a travesty on our pathological knowledge and a disgrace to our art. From our standpoint rheumatism does not affect bones. Enlargements or any other changes in true osseous structures are not due to rheumatism and are not

\*Read before the San Francisco County Medical Society, Jan., 1909.

affected by so-called rheumatic remedies. Rheumatism is never chronic in a single joint, but is an acute poly-articular thing—osteo-arthritis, while it may be poly-articular in varying degrees is always chronic. Rheumatism is an acute disease, with an especial predilection for the joints, but not for the bony structures, caused in our opinion, by a specific bacterium, or by its toxine, or possibly by one of many bacteria, or by their toxines.

Osteo-arthritis is essentially a chronic disease, also attacking the joint structures and involving especially the osseous tissues, giving rise generally to overgrowth in size and usually also particularly in the larger joints to increase in the density. Atrophic changes, however, may also be present at the same time and, perhaps, generally are present to a greater or lesser extent. Often, degenerative changes exist at the same time and may progress to the erosion of the joint cartilages and more or less joint destruction.

The etiology of the condition is not clear in my mind and may be variable. We know that nerve changes often co-exist and may play a part; possibly the changes in both nerve and bone are due to similar causes. We know that errors in metabolism are usually present. We know that history of infections is frequent. I have thought that worry has often been a co-condition, although I admit this last may possibly be simply a result. To me, it appears probable that the process has some analogy to what occurs in gout.

In this disease we believe that for some reasons, associated rather closely with metabolic errors, urates become in excess in the body and are deposited along the cartilages and, especially so, in and around the cartilages of some particular areas. It seems probable that some condition of the colloids in these areas determines the crystallization of these salts, or possibly some state of the colloids in other areas maintain them in solution, notwithstanding their excess, and they are only precipitated where this colloidal state is not maintained. Why this peculiar condition, whatever it may be, should exist particularly around the cartilages and then preferably in special areas we do not know, but the fact is evident. Therefore, I believe that in osteo-arthritis there exists some body or bodies in the blood, also favored or produced by metabolic errors or by some bacterium, by a toxic product from intestinal putrefaction, by toxemias of any kind not properly oxidized or destroyed, and then perhaps, some other colloidal changes in and around the articular cartilages favor their deposit and, as a consequence, the production of this irregular osseous overgrowth or degeneration. The nerve change may even play a part in the development of the clinical picture. This much we do know: That changes in and around the joints exist with lesions of the cord, which are much like the usual osteo-arthritic changes.

Regarding the influence of toxemias, we know, as a rule, that after the osseous nodes are palpable to the examining finger, any toxemia, even as simple as that which accompanies a common cold, that occurring from a simple sore throat, or even that re-

sulting from a sluggish bowel action; any of these, give at once pain in the joints, swelling and tenderness of the nodes, and favor the bony overgrowth. We know also that acute exacerbations often appear during or soon after infections with typhoid or pneumonia; also, after wound or surgical infections. The analogy to rheumatism is not very great, while the resemblance to gout seems more close than would appear at first thought.

**Diagnosis.** In the knees and elbows, the nodes, ridges, or osteophytes can usually be felt and seen. In the hands and feet they can always be felt and seen. In the hips and shoulders, they can often be felt by the fingers, and oftener are evident in the X-Ray plate. In the hypertrophic form, not alone can the overgrowth be noted, but also the great increase in density. Pain is always a symptom, at least, when the patient presents himself. That is the patient generally comes on account of the pain (although typical nodes are often found, giving no concern to patients who come for other reasons)—pain on motion—pain at the very beginning of motion which may lessen after a while and then again increase towards fatigue. When in the hips, sciaticas are often complained of. When in the spine, sciaticas, crural pain, numbness in the feet and legs, cold feet, neuralgia in various regions; depending, of course, upon the lesion location, are usually suffered. Other lamed joints, outside of that complained of, are found on search, although, perhaps not giving any symptom.

Motion is always limited, usually very much limited. This limitation of motion, especially in the hip and spine, should be determined with some care, for the normal excursion of these joints is apparently much greater than is ordinarily supposed. It is common for us to find a hip with less than 50% of normal motion, after having been assured the movements were all right, and it has occurred and more than once that we have been told that the motion was about normal when the joint was practically fixed. The joint motion should then be determined with some care, noting in the hip that the apparent motion is not taking place in the spine and that in the shoulder it is not at the sternoclavicular joint. Given then a chronic painful joint, having limited motion, deformity, and this also should be determined with some care; with thickenings or nodes felt with the fingers or determined by the X-Ray plate. Find evidence of similar, although not perhaps so pronounced lesions in other joints and your diagnosis is fairly secure—differentiate from tuberculosis which can hardly be mistaken for it, and no further question can arise.

Given a patient with sciatica, or crural neuralgia, of some standing, possibly changeable from side to side, sometimes better and then again worse, affected to some extent, perhaps to a greater extent, by the weather and, generally also by sudden jars. Examine the back and note its changed curve and that its range of motion is markedly limited. Note that the lordotic curve, instead of ending at the 10th or 11th dorsal vertebra runs up to the 7th or 8th dorsal, perhaps higher. Sit your patient on a table and see how near he can come to putting his head



between his knees. Turn him over and let him lie belly down, and have him throw his head backwards and lift himself on his elbows and then see if his spine comes up straight, with practically no increased curve, no sag and no motion. Flex his knee on the thigh gradually and see if the pelvis also rises. Try first one side and then the other. Roll him over on the back and measure the extent of the hip motions and if you find them limited differentiate from tuberculosis (and this should be easy) and you can again make a positive diagnosis. Get a radiogram, if possible, and you will often see the shadow of the impinging nodes and perhaps more often will be able to note the large, black, dense, hypertrophic vertebræ or hip joints. These cases may go on for many years, with no noted special symptom (although a superficial examination during that period would have demonstrated the restricted movement) no special symptom, except, perhaps some little stiffness after a strained position or perhaps some fleeting pains which the patient refers more or less jocularly to advancing age, or more positively to rheumatism. The stiffness, the checked motion steadily increases, and then some day perhaps with a cold, a sudden extra turn, or bend, or lift, or during a so-called bilious attack, the patient has pain in his back, along one or both sciaticas, in the crural nerves, in the knee, or perhaps, has intercostal neuralgia. The pain in the back may be exceedingly acute, even excruciating, or may be represented by the so-called "Crick in the Back." The attack is called rheumatism. The patient usually gets a remission under treatment, or with no treatment, but recurrent attacks more and more lame him, and later we have the picture presented. The disease has a tendency to crippling deformity and the patient often becomes house-ridden and perhaps bed-ridden. The extreme cases are not rare, those of the character described are common, while the number of slight and moderate cases are legion.

I shall not weary you by detailing case records, but to impress upon your minds the character of what I have attempted to depict will relate two typical cases, in instances of which relief can be confidently expected. A young dentist had for some years been suffering with pain in back and hips. This gradually increased until he was practically incapacitated. Medical attention has been discouraging. Examination showed both hips much restricted in motion in all directions, but especially in rotation. The spine was rigid, the normal curves were much lessened; the usual lordotic curve being replaced by a curve of much greater circle and ending as high as the 4th or 5th dorsal vertebra.

Treatment. Under anesthesia, forcible manipulation was made until the lower spine, at least, was freely movable and then correction enforced until the normal lordotic curve was exaggerated and he was placed in a P. P. jacket to maintain the over correction. He was laid up about a week and was then around. After three or four weeks was about his work in a steel brace, and has been since and now is practically free from pain.

Another type case. A man forty-five years of age

was seen some five years ago and found then to have osteo-arthritis of the spine. He has been working ever since. He tells me now that during the last two years he has had several attacks of "Crick in the Back" which was relieved by liniments and hot applications. Four days ago he was seized with severe pain in his back and thighs and had to be taken home. He was drenched with perspiration and was given morphin. The pain continued until the second day in spite of repeated doses of morphin. The pain was promptly relieved when he was laid belly down on the floor, and lordosis forcibly produced. He has now a rigid spine with much spasm in the erector spinæ. Motion in the hips is lessened in every direction and he presents the usual picture of osteo-arthritis. At present the patient is in bed and an attempt is being made to give him a normal curve. He is, however, still not at all convinced of the pathological process underlying his attack and will probably suffer several reminders before he will submit to anything more than temporary control.

At this time I desire to call attention to what I think may be a new test for hip motion, and which, I believe, denotes joint restriction and interference with full function earlier than other signs. The subject lies on the back on a table; both hips and knee are flexed to a right angle, the other leg remaining in full extension, and it is the abduction and adduction from this flexed position, especially the adduction, which constitutes the test. Adduction will often be found much lessened, perhaps, almost entirely prohibited, even when Marsh's test says that the hip motion is normal. I have tried this test over many years and find it always present, when other tests determine hip restriction and many times when no other physical sign offers, and have learned to depend upon it as the most reliable sign of hip joint interference.

#### A CASE OF ADACTYLIA INVOLVING BOTH HANDS AND THE LEFT FOOT WITH RIGHT AMELUS.\*

By FRANK P. GRAY, M. D., San Francisco.

On Dec. 29th, 1908, Mrs. J. F., primipara, aged 20, came to the obstetric ward of Lane Hospital, when nearing the end of the first stage of labor. She was found to have a vertex presentation of a medium sized child, in R. O. P. position, with very imperfect flexion. She had been in labor two hours and forty minutes when dilation was complete, and the water bag ruptured spontaneously. The head at once began to make short (posterior) rotation; flexion and long rotation being produced manually with great difficulty.

The second stage had lasted two hours and twenty minutes when the head escaped, and the right hand was found closely pressed against the chin. This was doubtless the cause of the imperfect flexion. The further course of labor was normal. The cord was

\* Read before the San Francisco County Medical Society, January 12th, 1909.

not around the neck, and no adhesions or amniotic bands were observed. There was spontaneous primary respiration, with very vigorous cry, and active motions. The circulation was good. The placenta was delivered after 15 minutes by "modified Crede" manipulations. It appeared normal in all respects. It measured 14x15.5 c. m.

The cord appeared normal, of medium size, 50 c. m. long and pulsated vigorously. Its attachment was marginal. There were no places which seemed to have been constricted. The secundines were sent to the pathological laboratory where they were carefully examined by Dr. William Ophuls, who pronounced them normal. The child was a male, well nourished, measuring 42 c.m. and weighing 61-2 lbs.

The following abnormalities were observed, viz:

1—Total absence of the right leg from 3.5 c.m. below the knee down.

2—Absence of the major portion of the tarsal and metatarsal regions, and three outer toes of the left foot with flexion of the remaining portions of the foot upon the tibia.

3—Absence of the thumb and two fingers of the right hand with the metacarpal portions belonging thereto.

4—Absence of the thumb and all the fingers except the little finger and of all the metacarpal parts of the left hand.

5—The presence of a small nevus on the upper lip just below and semicircularly around the nasal septum; another on the forehead at the base of the nose, and one on the occipital region.

The palate and maxillae are normal. The eyes appear the same as of any sound babe. No abnormal movements have been observed. Feces and urine were evacuated promptly, and the child nursed vigorously from the start.

The mother of this child was a half orphan, her father dying during her infancy from causes unknown to her. Her mother is living and well. She had borne four children of whom two died in infancy, one at twelve years old from pneumonia, and she alone survived. She does not know of any marks nor abnormalities in her family. She was separated from her mother when six years old. As a child and young girl she was healthy. Began to menstruate at about fourteen years old, was regular and normal in her periods and suffered no marked inconvenience until pregnant.

The father of this child is 26 years old, and reputed to be in good health. Nothing is known, however, as to his family in any way.

The history of the early months of gestation has been gone over very carefully, since the causes of these deformities must have acted in the very early weeks. She asserts that her pregnancy resulted from several different assaults. The last and the one probably responsible for her impregnation she describes as a "fight." The fact that she did not at all suspect that she was pregnant until almost time for her second menstrual date following this would indicate that the mental impression was not extraordinarily profound. She suffered from vomiting severely the first and second months, possibly aggravated by a retroversion of the uterus for which she was rather vigorously treated after the fifth or sixth week. The treatment included reposition, under ether; insertion of a hard rubber pessary which was worn for one week; the use of tampons, and finally abandonment to processes of nature.

The subsequent course of her gestation was entirely uneventful, although she was, of course, depressed by the many unhappy events of her few years.

## THE DIFFERENTIAL DIAGNOSIS OF TUBERCULAR MENINGITIS.\*

By GEORGE E. EBRIGHT, M. D., San Francisco.

Typical cases of tubercular meningitis are naturally divided into three stages: A first prodromal stage of indefinite symptoms that lasts from four or five days to two or three weeks. This first stage ends with the advent of one or more symptoms of cerebral irritation which mark the beginning of the intermediate stage and characterize its course which may last from three to ten days, to pass into the final stage of coma, the duration of which is usually two days to a week. Thus the disease will last, in the majority of cases, about three weeks.

The diagnosis is comparatively simple in the intermediate period, marked as it is with the manifestations of meningeal irritation. It is frequently much less simple when the patient is seen for the first time in the comatose condition after many of the preceding symptoms have disappeared. But the greatest difficulties of diagnosis lie in the early stage before marked conditions appear that point to the central nervous system, and also in these cases that do not adhere in their course to the usual type but pursue an anomalous course either in time or symptoms or both. The variation from type is especially seen in the first two years of life when the various stages are not sharply divided and in which after a convulsion an infant may sink into coma and present the picture of the third stage of the disease. In some parts of Northern Europe the entire duration of the disease is usually less than a week.

Considering the first stage: The onset of the trouble is as a rule gradual. The child becomes drowsy and lacks inclination to play. There is a change in disposition often observed. A child that in health is too lively to want to be petted will be content to lie in its mother's lap and be rocked or caressed. The sleep is disturbed and restless and there may be grinding of the teeth or night cries. The appetite suffers early and constipation is the rule. Vomiting without apparent cause is common. The tongue is coated. Moderate fever is present and if the child is old enough it may complain of headache. Sometimes younger children will put the hand against the head in a suggestive way.

It must be confessed that in these symptoms there is very little to justify a diagnosis of tubercular meningitis if it is suspected. The unfortunate thing is that they do not often enough arouse a suspicion of meningitis, so that the lesser corroborative signs are apt to be overlooked. These corroborative considerations are lesser only in prominence but not in importance. For instance the trouble is apt to be attributed to gastritis or intestinal disturbance but catharsis results in normal stools with only passing or no amelioration of the symptoms. If the respirations are watched while the child is at rest or asleep frequently more than the normal irregularity of rhythm may be seen. Or the pulse while it may be more than the normal rate may

\* Read before the Cooper College Science Club, Dec. 7th, 1908.

still be below the average pulse-temperature ratio for the degree of fever present. A slow pulse is very suggestive of brain disease even in the first few days. A slight irregularity of the pulse is apt to appear very early and to increase as the disease progresses. It must be remembered that normally the effect of respiration on the pulse of a child is easily exaggerated and is to be taken into account. In young children the fontanelles may be seen to bulge before cerebral symptoms appear or in elder children the corresponding increase in the muscle tone of the limbs of the beginning exaggeration of the knee reflexes speak for higher than normal intracranial pressure. If in addition attacks of vomiting occur without apparent cause or if the patient indicates a pain in the head, the symptom complex becomes quite suggestive of meningitis. If, further, there is a history of tuberculosis in the parents, especially according to one observer (M. Thiemich) healed tuberculosis, then the matter of tubercular meningitis becomes more than a suspicion. If now the spinal fluid should be found under high pressure, clear in appearance or only slightly turbid and containing as much as 0.5% of albumin, a positive diagnosis is possible. The night cries might suggest hip disease and that must be ruled out. In children under a year old persistent vomiting with an elevated temperature and in whom there is no sufficient cause for the trouble in the stomach or intestines, tubercular meningitis comes into question.

Chronic nephritis of the interstitial type sometimes occurs in children and may be evidenced by headaches, neuralgias, disturbances of vision and respiration. Uremia with vomiting is especially apt to suggest meningitis. But the high arterial tension and hypertrophied left ventricle point to the kidneys.

In the second stage with symptoms present directly referable to the central nervous system, such as ptosis, strabismus, nystagmus, pupillary changes, cervical rigidity, Kernig's sign and retracted abdomen, it is not hard to arrive at a conclusion, especially as lumbar puncture enables us to make a microscopical differentiation. The question of meningismus does, however, sometimes arise. I saw in Professor Mueller's clinic in Munich a man of about twenty-five who came to hospital with severe headache and vomiting, rigid neck and Kernig's sign, but in whom the spinal fluid was normal while the urine revealed an acute nephritis and the recovery was rapid under diuretics and restricted diet.

In older children when the onset of meningitis is abrupt it is more apt to be the epidemic form than tubercular. Likewise chronic basilar meningitis is usually due to the meningococcus intracellularis. Tubercular as well as epidemic meningitis may have periods of remission of symptoms or even apparent recovery so that a diagnosis is impossible without examination of the spinal fluid.

In pneumonia, meningismus is a more or less frequent accompaniment, though I have never seen it to a very marked degree. Typhoid in children

may closely resemble early tubercular meningitis. After failure to find the deciding factors in a suspected case of typhoid fever in a child the spinal fluid will frequently show the presence of tubercular meningitis. It is in such cases that the von Pirquet reaction may be of value, before resorting to lumbar puncture.

A highly important group of cases that through error may easily be suffered to die under the impression that they are the victims of meningitis is that one of intestinal poisoning very ably described by Kimball of New York in the June number of the *Archives of Pediatrics*. It comprises children who present constipation, vomiting, convulsions, coma, sometimes amaurosis, strabismus or nystagmus and who usually react promptly to free intestinal irrigation even after catharsis had been apparently of no avail.

In conclusion, a brief mention may be made of the diagnostic points which seem to me to be all too frequently overlooked in the performance of lumbar puncture in tubercular meningitis. Categorically they are as follows:

1. The intraspinal pressure is high in the irritative stages. Its measurement should be made with a mercury manometer, in view of the inaccuracy of other methods.
2. The fluid is usually clear or slightly turbid, and may present a fine filmy coagulum on standing several hours. This coagulum is highly characteristic.
3. The albumin content is high. It may even be 0.7% and is usually about 0.2%.
4. As in all meningitides, Fehling's reagent is apt not to be reduced.
5. Tubercle bacilli can be found in 30-50% of the cases and always after death in the spinal fluid.
6. Lymphocytosis is usually present in the fluid except in the later stages, when polynuclear cells may predominate possibly on account of a mixed infection, though more likely because that protective function represented by the multiplication of the lymphocytes in tuberculosis and tuberculin reactions has been overcome and lost.

#### Discussion.

Dr. Hirschfelder: There is not very much to be said in addition to what Dr. Ebricht has told us this evening as to the diagnosis of tubercular meningitis. Until the fluid has been removed and tubercle bacilli found, or a chemical examination of that fluid has been made, it sometimes is a matter of great difficulty to diagnosticate these cases. Of course, the history of tuberculosis in the family, the presence of enlarged glands in the patient, or other tubercular condition, will suggest tuberculosis. But in many cases the differential diagnosis between a non-tubercular meningitis or a sporadic form of cerebro-spinal meningitis, or even abscess of the brain following an affection of the ear, may be very difficult until a spinal puncture has been made. The Kernig symptom is not always present in meningitis, and it is more apt to be absent in the tubercular meningitis than in the cerebro-spinal form. In examining for the Kernig sign the examination should be made according to the method of Kernig. When Kernig first called attention to this sign he taught that the patient should be sitting up in bed, and while in this position the lower leg should be extended at the



knee, and where the Kernig symptom was present a complete extension was impossible and painful. It has likewise been observed that when that symptom has been tested a dilatation of the pupil is very apt to occur. In tubercular meningitis the Kernig sign is not quite as frequent as in the non-tubercular meningitis. Occasionally one will be very much deceived by the rigidity of the neck and the presence of the Kernig sign and will suppose a meningitis is present when absent. We had an illustration of that about two weeks ago in the clinic. A man was brought in with the history of a running ear of one year's duration without any other symptoms. About one week before entering the clinic there was a history of a chill and some fever and headache. He entered the hospital one night and the pupils were found to be equal. There was rigidity of the neck and a well-marked Kernig sign. The next morning the rigidity of the neck was even more marked than the night before and the Kernig symptom was also well marked. There was a complete paralysis of the right oculomotor nerve with right dilatation of the pupil, and thinking that in all probability it was a case of meningitis, we made a lumbar puncture. The fluid was not under pressure, but about 30 cc. were removed. It was turbid and contained a large number of polymorphonuclear leukocytes, the albumin content not being determined. The examination by the interne showed the presence of something that looked like meningococci, which a further examination proved to be nuclear detritus. Thirty cc. of Flexner's serum was injected into this patient. However, the patient died, and at post mortem no meningitis was to be found, but a very large brain abscess due to the trouble in the ear.

On the other hand, I remember a case at the old City and County Hospital of a child coming in without the Kernig sign and without the rigidity of the neck, but with running of the ear. A brain abscess was suspected. The child died before any operation was done. At post mortem no abscess of the brain was found, but there was an extensive tubercular meningitis. The examination of the fundus of the eye is likewise of great service in making a differential diagnosis between tubercular and non-tubercular meningitis. It may then be possible to find a tuberculosis of the choroid. The tuberculin ophthalmic reaction is also of importance. The lumbar puncture is the most important test and should always be resorted to. In the large majority of cases with sufficient care the tubercle bacilli can be found. Dr. Ebricht has called attention to the fact that the polymorphonuclear leukocytes are sometimes found in a tubercular form, especially after the condition has lasted for some time. On the other hand, in the more chronic forms of the epidemic cerebro-spinal meningitis you likewise have lymphocytes present, so that a diagnosis based upon this fact is not always positive. The method that I have always seen used has been to test the extension of the leg at the knee in a horizontal position; finding it perfect, the patient then sits up, and with the feet hanging over the edge of the bed the extension is again tested. Where the Kernig symptom is present at about 45°, more or less, the extension becomes impossible. That differs from the method of Osler, who makes his Kernig while the patient is lying down, flexing the leg to a right angle, than extending the lower leg at the knee. This method has been investigated carefully by some one whose name I have forgotten, who made a determination of the angle by which the whole leg can be flexed at the hip joint, and he found that this joint varies very decidedly in normal individuals.

Dr. Wiel: I wish simply to make a remark with regard to the Kernig sign. What Dr. Hirschfelder has said is of great interest to me with regard to the method of test for this sign. It has been my fortune to have seen a number of different techniques for

determining the Kernig sign. I remember that Dr. Hirschfelder and I had some discussion with regard to this in the clinic. After that I met a distinguished neurologist here who took the Kernig sign in an entirely different way, and he claimed that it was the way that was used by Kernig himself, and that was to have the patient recumbent in bed and then make him sit up, and as he sat up, if he had meningitis it was decided by the flexion of the knee in the act of sitting. I have seen others have the patient sit up and flex the thigh on the hip and the leg on the thigh, and we have the patient sitting with his legs swinging over the side of the bed. The first named method seemed to involve the least extraneous stimulation. It differs a little from the way in which Dr. Hirschfelder has explained it and I should like to have it settled in my mind.

Dr. Ebricht, closing discussion: Unquestionably lumbar puncture for relief of pressure can with profit be much more frequently performed in tubercular meningitis. A very few cases have recovered by so doing. But even if the patient is not expected to recover, much is accomplished toward adding to his comfort in keeping excessive intraspinal pressure down, as has been shown by Schlesinger and others. For example: I recently withdrew 40 cc. of the spinal fluid from a 22-months-old girl with tubercular meningitis, a little patient that had been restless all day, had not slept and had eaten only with difficulty. Immediately after the operation she ate heartily and slept all night.

#### A CASE OF BRAIN TUMOR.

By CAMILLUS BUSH, M. D., San Francisco.

On April 22nd, 1907, there entered the University of California Hospital, Thomas C., aged 24, an American, an iron molder by trade. Family history negative. The personal history was an unusually good one, the man being of temperate habits, having had no serious diseases, denying venereal infection of any sort. The only point at all suggestive was the fact that he had at one time, been a painter.

On entrance to the service of Dr. Moffitt he gave the following history: On the 27th of March, while engaged in pulling a truck at the Union Iron Works, he sustained an injury due to the truck running into a box in which injury his arms were violently twisted. He immediately noticed a faintness and a numbness in the right side of the face. He stopped work and during that same day noticed an occasional twitching of that side. The next day he resumed work and on attempting to lift a weight had another faint seizure. At that time his face pulled to the right again and he had some clonic convulsions of the facial muscles. His right arm also curled up with a flexing of the fingers and wrist. With these movements were associated a numbness of the arm extending to the shoulder. The patient quit work. Since that time the attacks have occurred every eight or ten days, the arm and finally the leg getting progressively weaker. Some light epileptiform attacks in the leg developed ten days after the injury. There has been some difficulty with the speech at times. The difficulty seems to be in pronouncing words. There has been occasionally headache, but no vomiting, before his entry to the hospital.

Upon entrance examination disclosed a well nourished young man who walked with a slightly hemi-

phlegic limp on the right side. On close inspection the right side of his face seemed to be slightly paretic. The muscular movements of the right arm and leg were also weaker than on the left side, the reflexes were increased, except the right epigastric, which was decreased. The most striking feature at this time, was the complete asteryognosis, the man being unable to recognize the nature of any body placed in his right hand. At this time there was no atrophy of the muscles of the right side of the body. The main motor disturbance was in the right arm, the muscles of the leg being slightly involved. No Babinski, no clonus. Examinations of the chest, abdomen, urine and blood were negative. Even at this time there were slight disturbances in sensation of the right forearm and hand, patient being unable accurately to localize pin-pricks and there being a definite hypalgesia on the dorsum of the right hand. No disturbance of temperature sensations.

Patient was under observation until June 12th, almost two months after his entry to hospital. During this time his symptoms steadily progressed until just before being transferred to the surgical side, there was a marked change for the worse in his condition. At this time his whole right side was almost completely paralyzed, paralysis being of the spastic type. The man could walk only by following the wall about to his right and supporting himself by it. The reflexes were greatly increased, there being a Babinski reflex, ankle and knee clonus, while the epigastric reflex on the right was abolished. The left side of the body remained practically normal. The muscles had begun to waste on the right. The asteryognosis was absolute. The other sensory disturbances more marked than before. Sweating on the right side was constant and muscular twitching on the same side having developed. At this time the examination of the eye-grounds by Doctors Hulén, Franklin and Moffitt disclosed a bilateral optic neuritis becoming progressively worse from the first examination, a month after admittance, until on the day before operation a choked disc was present. At this time the left pupil was larger than the right and the extent of the optic neuritis greater on the left side than on the right. The tongue deviated to the right. There was difficulty in getting food out of the right cheek. Percussion of the skull gave an apparently higher pitched note on the left side. The question of diagnosis in the mind of the medical staff lay between a functional or hysterical condition and an organic lesion involving, to all appearances, the left motor cortex. A few days preceding operation the rapid increase of the choked disc, accompanied by occasional vomiting, and the accentuation of the paralysis pointed strongly to the presence of a real lesion.

Taking the history into consideration, the suddenness of the onset, and the development of the case, it seemed that one of two conditions was probably present, either a glioma into which a hemorrhage had occurred, giving rise to the sudden onset of the symptoms, or a rapidly developing cyst of the brain.

The case was transferred to the surgical side and in the absence of Doctor Sherman, I performed the decompressive operation in the left parietal region on June 12, 1907. After a tube tourniquet had been applied around the head, a large, inverted horse-shoe incision was made so as to expose the whole of the left motor region. Trepine openings at the superior angles of the horse-shoe permitted the dura to be separated from the calvarium. The skull was divided between these openings by means of a gigli saw and the lower limbs completed with the aid of the Devill-bis forceps. The bone flap thus formed was broken down exposing a tense, non-pulsating dura. The dura was opened and the brain found to be bulging with flattened cortex and indistinctly marked convo-

lutions. Beneath the cortex could be felt a mass directly under the pre- and post-central convolutions, apparently the size of a hickory nut and seemingly 1 or 2 c.m. below the surface. At this time, on account of the bad breathing of the patient, no effort was made to incise the cortex, and further explore the mass. The dura was left opened, the bone stripped off from the peristum and completely removed. The skin was then carefully sutured with interrupted sutures of fine silk. Two small gutta percha drains were inserted, one through the temporal muscle and one through a small incision outside of the main line. Patient went back to ward in good condition. While going under the anesthesia he had had a violent and prolonged excitement stage, but the muscular movements were confined entirely to the left side of the body, the right side being as paretic as it had previously been about the hospital.

On the afternoon of the operation, patient recovered largely the power of motion of the whole left side. Almost as quickly, the spasticity disappeared, the reflexes coming back almost to normal, and the epigastric and cremasteric reflexes reappearing. For several days the patient had a marked edema about the left eye, doubtless occasioned by the too low application of the tourniquet. There was no evidence of a sinus thrombosis. In the course of the next two weeks the optic neuritis completely subsided, the subsidence being steady and gradual and repeatedly noted by Doctors Hulén, Moffitt and Franklin. The wound itself healed per primam and a very moderate bulging of the brain occurred. The only sign which did not greatly improve after this operation, was the asteryognosis which remained as before, absolute. Gradually, however, the brain hernia began to increase, becoming more and more tense and prominent. Associated with this increase in the tenseness of the hernia was a recurrence of his old symptoms, the right side became again more and more spastic, the reflexes exaggerated, epigastric reflex on the right more and more sluggish, the wasting of the muscles on the right more marked, muscular tremors more prominent and sensory disturbance of the right arm again marked. At this time there was a definite lead-pipe rigidity of the joints of the right side and the sweating of the body was constant. The sense of positions of his fingers and toes was interfered with. Associated with this was also an ataxia of the right arm and leg. He was unable, at this time, to feed himself with the right hand and his gait again became hemiplegic. There was no recurrence, however, of the papillitis.

Such was his condition when the second operation on September 3rd, 1907 was undertaken. No general anesthesia was administered, but the old scar was infiltrated with Sleich's solution, the incision made precisely in the line of the old incision so as to avoid as much bleeding of the scalp as possible. Everywhere dense adhesions were found between the scalp, periosteum and the retracted dura and the surface of the brain itself. At this time it was found that there had been a reconstruction of bone between the dura and the periosteum so that the lower two-thirds of the hernial opening were covered by a thin scale of new bone. On dissecting down to the upper part of the wound between the edge of the skull and the top of the new formed scale, a large cyst was opened into. This cyst lay within the cortex and overlying it was a thin layer of brain substance not over two or three m.m. thick. Two to three ounces of perfectly clear, slightly yellowish serous fluid were evacuated. This fluid clotted quickly. There was no demonstrable wall to the cyst, or at least one of such delicacy that it could not be separated from the surrounding substance. It penetrated to a depth of 7 to 8 c.m. below the surface and extended downward and backward toward the situation where the deep nodule had been felt at the first operation. The bottom and sides of the cavity, curiously enough,

seemed formed of displaced convolutions. The cyst did not at all present the appearance of the inside of the ventricle and was evidently a brain cyst that had approached the bulging and less dense portion of the calvarium. At the top and lower side a few pieces of what seemed the wall of the cyst were removed for examination. On account of the lack of definite lining it was thought best not to cauterize with any chemical. Removal of the wall was impossible. Drainage was not considered on account of the danger of secondary infection. The cavity was wiped out quite dry, the bleeding checked and the scalp carefully sutured with fine black silk. A snug head bandage was applied. During the operation the patient conversed freely, experienced no discomfort, and his pulse did not vary from normal. While the scalp was being closed he volunteered the information that the motion in the hand had improved. He complained of slight left-sided headache for about five minutes after the operation.

During the next few days there was again an improvement in all the symptoms with the exception of the asteryognosis. Improvement was almost as marked as that following the decompressive operation. In the course of the next five weeks, during which time I was away, the symptoms again recurred so that by the early part of November, the exaggerated picture existing before the last operation was again present. On November 4th the cyst was tapped and two ounces of amber, slightly turbid, fluid removed. Following the tapping, was again a slight improvement of all motor symptoms. During all this time there was no return of the optic neuritis. Within a few days, however, the hernia again became tense and bulging and the condition as before. The lack of a more definite improvement seemed to point to the supposition that he had a glioma infiltrating the motor cortex in addition to the cyst. The portion of cyst wall excised at the second operation was pronounced by Doctor MacCallum, at Johns Hopkins, to be a glioma and a return of the growth was predicted. This tapping was repeated in the latter part of November with the same result as before, that is to say, a transient improvement. Thereafter, at intervals of about two weeks, the cyst was tapped and always there was removed from two to four ounces of clear or blood-stained fluid. Each time there would be a let-up of the symptoms, but recurrence followed with the refilling of the cavity.

On January 23rd, 1908, a third operation was undertaken, this operation also being performed under local anesthesia. The flap was again turned down and dissected free from the surface of the brain. The dura was opened and the cyst incised. The whole cyst wall was found lined with tumor tissue to such an extent that the cavity was almost obliterated. It contained, however, some dark fluid. There was found a line of cleavage between the dura and the brain, and the mass was now enucleated piece-meal with the finger. The hemorrhage was inconsiderable. The cyst cavity was filled with salt solution and again carefully closed. The cellular tumor removed was friable and seemed to lie in definite lobes and lobules with fine vessels running over the surface. Microscopical sections showed the same picture as the previous section. At the time of this operation the patient expressed again no feeling of discomfort and was able to converse throughout the proceeding. But following the operation there persisted for several days an almost complete paralysis of the right arm, together with a marked motor aphasia. These new conditions gradually cleared up in the course of the following month. The spastic condition of the right side was somewhat improved, although the hand was practically useless.

Following the operation of removal of the tumor, the cyst refilled and was tapped three different times with the usual result of temporary improvement. During the last tapping the fluid came away quite

bloody and just after the removal of the needle the patient had a violent convulsion beginning very suddenly with jerking of the right hand and arm and soon involving the whole body. During the day he had seven other such convulsions. On the following day the hernia was very tense and bulging, but the convulsions had ceased. Thinking possibly there might have been a hemorrhage into the cyst, the cyst was again explored under local anesthesia. It was found, however, to be filled with ordinary clear serous fluid. The surprising feature of this exploration was the absence of any tumor substance. The cyst cavity was wiped out with 95 per cent alcohol and the scalp again carefully sutured. On two other occasions in the next month the cyst refilled and was tapped with the usual result.

The fifth operation again under local anesthesia, was performed in August, 1908. On opening the cyst this time there were seen to be some adhesions between the sides of the walls. Again the cavity was wiped out with alcohol and again there was no evidence of any tumor mass whatever.

Soon afterward the patient was transferred to the City and County Hospital, where he has been ever since. For a long time there was no bulging of the hernia; the paralytic condition seemed to be stationary, that is, he was able to walk with a spastic gait on the right side, swinging his leg and arm, but was uncertain on rough ground and had little use of his right hand. His sight was good with no headache nor vomiting. About one month ago there was a pronounced fullness at the hernial site and Doctor Arthur Fisher, who had charge of him at the City and County, again explored the region of the cyst, but found no evidence of cyst nor tumor, the deformity apparently being due to adhesions and when these adhesions were released, the deformity disappeared.

There are at least three noteworthy points in connection with this unusual case. The first is in connection with the remarkable disappearance of the tumor, or rather its cystic degeneration. It is not an unknown happening, as several men have reported similar cases in which a glioma has disappeared apparently with the formation of a cyst. This particular case evidences beyond a doubt that a solid glioma may gradually undergo degeneration to such an extent that the tumor mass itself disappears, and to this category probably belong the group of cases in which tumor symptoms disappear after decompressive operations. The fact may be accounted for on the supposition that the resulting cyst occupies a silent area and that the decompressive operation has guarded against pressure symptoms.

The second feature is one that was drawn attention to by Cushing and Thomas in their article on March 14th in the *Journal of The American Medical Association*, that is, that operations on the brain itself may be conducted without sensation. In this particular case it will be recalled that five separate operations were performed under local anesthesia.

The third feature of interest is the apparent definite localization of a center for the steryognosis sense. The asteryognosis was an early and constant sign, absolutely complete at the time when the brain lesion was small and subcortical and underlying the middle parts of the pre- and post-central convolutions. Of course its more accurate localization cannot be given in connection with this case, as the depth to which the tumor penetrated, or its accurate lateral expansion are not known. It seems likely that with the general acceptance of the fact that second stage brain operations may easily and safely be done without anesthesia, that localization of motion and sensation may soon be established beyond peradventure by electrical stimulation of the cortex of such conscious patients; and it is to be regretted that such stimulations were not carried out in connection with the present case.



### Discussion.

Dr. Kaspar Fischel: I would like to congratulate Dr. Bush, not only that he can show us his case in such a good condition, but especially upon his courage to enter the skull before an exact diagnosis could be made. At the last meeting of the A. M. A. Drs. J. Berdley, Jr., and H. Cushing of Baltimore (Transactions of the Section on Ophthalmology, 1908, page 532) advocated "not only in many cases of cerebral tumors but in a number of other conditions, an early decompression." "Permanent alterations in the fields and loss of visual acuity invariably take place if choked discs are allowed to run their course, and in a very large proportion of cases complete blindness supervenes before death terminates the story, and indeed only too often in cases in which the primary lesion does not lead to a fatality. In a number of cases the choked discs have subsided after operation with complete restoration of normal visual acuity."

Dr. Herbert C. Moffitt: From the time the man was properly examined there was no question of the organic nature of his condition. The absence of abdominal reflexes on the right side was an early and striking feature. The asteryognosis was, of course, the focal symptom, and the symptoms from the motor tract were distant symptoms and were caused probably by the growth in the parietal lobe pressing forward on the pre-central convolution at the level of the arm and leg representation. If I remember rightly, at the first operation the needle was introduced in the middle of the post-central convolution and in the parietal lobe, because it is pretty well understood now that the steryognostic sense is represented chiefly in the parietal lobe. Diagnosis was made clinically of probable glioma with hemorrhage. It is fairly frequent to have sudden onset of symptoms due to a hemorrhage into a quiescent tumor. I remember one case of a man having sudden convulsions while on the ferry boat. This was followed gradually by hemiplegia, and the subsequent course of the disease and autopsy showed a glioma with evidence of numerous hemorrhages. The present man had probably a silent glioma into which a hemorrhage occurred following his sudden strain.

Dr. Emmet Rixford: I suppose that the hemorrhage reported as having occurred in the brain may to a considerable extent account for the presence of the cyst. It is comparatively common for hemorrhages in the brain as in other parts of the body to break down and form cysts. I do not wish to contradict the diagnosis of glioma but I should be obliged if Dr. Bush would make it clear whether the clinical course of the case and the pathological findings may not be explained on the occurrence of a hemorrhage in the brain with subsequent cyst formation rather than on the occurrence of a hemorrhage in a pre-existing glioma which only at that moment began to cause symptoms and which subsequently underwent cystic degeneration and (after repeated evacuations) finally disappeared. The evidence of the presence of glioma is apparently not very conclusive. In the operation in which the cyst was first evacuated no definite tumor tissue was found but a portion of the almost undiscoverable wall of the cyst was removed and on being examined was pronounced to be gliomatous. Doubtless a certain degree of gliosis would occur about a blood clot or about a collection of fluid in the brain.

Dr. Alfred Newman: This is a very pretty case. I would like to make a few remarks with regard to the technic. Dr. Bush says that he removed the bone covering of the brain. It is too bad that a case if often spoiled in post-operative results by succeeding traumatic epilepsy. A good many of these cases are followed by epilepsy where the bone box is removed and this is due to the adhesions forming between the scalp and the dura and the brain.

Krause in his operation for brain tumors always leaves the bone intact and he told me he thereby escapes the resulting epilepsy. The one case I trephined for fracture of the skull I removed the bone and did not replace it and that patient developed epilepsy afterwards. Dura was opened in this case. The next case I got was one where the patient had received a blow from a horse's hoof in the frontal region. The first case of which I spoke was a fracture of the parietal bone. In the second case I removed the fragments but put them back and this man made a complete recovery without any succeeding epilepsy. Fragments here had been driven into brain tissue. It is too bad in these cases if we make a successful operation to have our results clouded by a succeeding epilepsy.

Dr. Camillus Bush: This tumor was definitely a glioma. There was little cap of tumor tissue on the top of the cyst. The second tumor removed showed exactly the same histological structure as the first. I think with regard to the point made by Dr. Newman, that in the decompressive operation the bone should be removed. Of course in traumatic cases the removal of a clot should be done with preservation of the bone flap.

### TUBERCULOSIS OF THE KIDNEYS.\*

By WILLIAM FITCH CHENEY, M. D., San Francisco.

Tuberculosis of the kidneys is a subject of interest to three different groups of investigators; to the specialist in internal medicine, the specialist in genito-urinary diseases and the general surgeon. The first and the second are concerned particularly with its recognition, the third with its cure. By the efforts of these various workers, our knowledge of this subject has been greatly extended during the last few years; until now we recognize the disease more readily and cure it more certainly than ever before. Early diagnosis and early nephrectomy after exact tests of the function of the other kidney—these are now conceded to be the essentials for successful treatment.

**Etiology.** How do tubercle bacilli reach the kidneys? Obviously by one of two ways: by the blood or by ascending infection through the ureter from the lower urinary tract. The pathway from below upward used to be considered the most common, but the frequency of this route is now questioned. Tubercle bacilli are occasionally found in the urine of tuberculous patients, even when autopsy discloses no disease of genito-urinary organs. It seems more likely, therefore, that where ureter, bladder, prostate, seminal vesicles or testicles are found diseased co-incidentally with kidney, the infection has been from above downwards, kidney first and the other organs afterwards; or else it has been entirely independent and merely contemporary. Ascending infection is not considered impossible but simply less frequent than hematogenous infection.

In case of hematogenous infection, how have bacilli entered the blood? The kidney infection may be only a part of a general tuberculosis, miliary in pathological type, and in such case acute in clinical type and running a rapid course. But kidney tuberculosis is usually very chronic and the question then arises, is the kidney infection primary or secondary? The possibility of a primary tuberculosis of kidney

\* Read before the Cooper College Science Club.

is admitted, though its hematogenous origin can not then be easily explained. Is there always in such cases a primary focus somewhere in the body, unrecognizable clinically, to which the kidney focus is secondary? The mode of origin, whether hematogenous or by ascending infection, has much to do with determining the site of the pathological process in the kidney.

**Pathology:** Two distinct types of lesion are found: one in the cortex, from embolic infection, with the formation there of one or several discrete, localized tubercular nodules, that ultimately caseate and discharge; and the other in the pelvis, from infection of the pelvis primarily, either by tubercle bacilli in the process of excretion from the blood or by bacilli ascended along the ureter. In the first case, tubercular nodules may long exist without producing changes in the urine, though the patient gives constitutional evidence of infection, such as fever and disturbed nutrition, and local evidences such as pain and dragging sensation in the back. In the second case, the urine constantly contains pus and blood in varying amount, as in any pyelitis; while the process advances gradually to a pyo-nephrosis and the kidney substance is slowly destroyed. In either pathological type it is now recognized that the disease may for a long time remain unilateral; and hence the value of early diagnosis and nephrectomy, while the other kidney is still sound.

**Symptoms:** These are very variable and must therefore be considered under several different heads:

1. *Symptoms referable to the kidney:* Under this head comes (a) pain in the back on one side more than on the other, similar to that felt in impacted stone, increased by any jar of the body; (b) a dragging ache, similar to that caused by movable kidney when the patient stands long on the feet; and (c) recurring attacks of colic resembling those produced by the passage of a calculus but due here to the passage of purulent debris and of blood clots.
2. *Symptoms referable to the bladder:* Under these are included irritability, frequent desire to void urine, pain during the act, and polyuria; these symptoms due either to coincident tuberculosis of the bladder or to reflex irritation from the kidney lesion.
3. *Symptoms referable to the urine:* Sometimes the sole complaint is of a urine always turbid, but without any discomfort associated with its passage; one of my cases was conscious of no disease until he was rejected for life insurance because of turbid, purulent urine. Again the complaint is of recurring attacks of bloody urine, which may occur without any symptoms except this to cause the patient alarm.
4. *Symptoms referable to the general health:* The patient complains simply of weakness, lack of energy, loss of weight and of appetite; with or without any of the symptoms previously described, to point to the kidneys as the seat of disease. Thus the symptoms may be all local or all general, and in the latter case the kidney is apt to be forgotten as a possible site for tuberculosis.

**Methods of Examination:** With a history pointing to the kidney as possibly or probably tuber-

culous, the means at our disposal for reaching a diagnosis are as follows: 1. **Physical Examination:** Normally the kidneys are not palpable; when they are, it is only rarely that their size or contour is sufficiently changed to enable us to diagnose tuberculosis by this method alone. A kidney not only prolapsed but also enlarged and irregular in outline, is a suspicious one but that is all. Furthermore, attention has been called to the fact that an enlarged kidney is often the healthy one, hypertrophied to compensate for some disease in the other which has destroyed or greatly decreased its function. 2. **Examination of the bladder urine:** Investigation ordinarily shows pus and blood corpuscles in varying amounts, but they may both be absent if the tubercular nodules do not communicate with the kidney pelvis. The urine is usually acid, eliminating decomposition in the bladder, and desquamated cells from the bladder are not found as in cystitis. Tubercle bacilli may be found in stained specimens of the sediment, but are not usually; and if apparently present, must be carefully differentiated from smegma bacilli. 3. **Examination of urine from each kidney:** By this method the bladder wall is inspected incidentally and the mouth of each ureter, so that cystitis and localized tuberculous patches can be seen if present. Each ureter is catheterized separately and the urine from each is then examined, to determine from which side the pus comes and whether one kidney or both are diseased. Tubercle bacilli may or may not be found in the stained specimens, but the only reliable proof of their presence or absence is obtained by injection of guinea-pigs with the urine intra-peritoneally. 4. **The use of tuberculin:** The subcutaneous injection of tuberculin, if renal tuberculosis is present, gives a threefold reaction: (a) the local reaction—redness and infiltration and tenderness of the skin about the site of injection; (b) the focal reaction—increased frequency and discomfort in urination, pain over the kidney radiating down towards the bladder, sometimes a typical attack of renal colic, and usually an increased amount of pus and blood in the urine; (c) the general reaction—fever, headache, nausea and vomiting and general malaise.

The diagnosis must always consider not only one kidney but both, and not only the kidneys but all other organs likely to be coincidentally involved, as the bladder, testes and prostate, and outside of the genito-urinary tract, the lungs, lymphatic glands, peritoneum and intestines. Supposing that no focus of tuberculosis has been found elsewhere than in one kidney, the function of the other kidney must be still carefully tested before nephrectomy is advised.

During the past year I have seen two cases positively proven to be renal tuberculosis, besides two others still under observation, where the diagnosis is probable but not yet positive. The two positive cases were as follows:

**Case I.** A young lady, aged 25, was brought to me by her physician in December, 1907, because of recurring attacks of pain in the right side of the back and abdomen. In August, 1906, she had a fall, sliding down a snowbank and striking violently on

her back. Following that she began to have pain on urination, but the urine remained clear. In November she had an attack of pain in the back on the right side, running down into the bladder, with frequent urination and vomiting, but no fever, the whole attack lasting about two hours and very severe. This was repeated about Christmas, 1906, and since then such attacks had recurred irregularly during 1907. Between her paroxysms she was in poor health, tiring easily, very nervous, and with a dull ache in her right side and back if she was long on her feet. Following the attacks she had frequently noticed a thick, muco-purulent discharge from the urethra, streaked with blood; but at all other times the urine was clear and gave an absolutely normal analysis. Examination showed a prolapsed kidney on the right side, descending so that the lower pole was distinctly palpable on deep inspiration, but not so that the kidney could be caught and retained. A smear made from the urethral discharge following one of her attacks of colic was examined by Dr. Ophuls, who reported as follows: "Smear shows many polynuclear leukocytes, some lymphocytes, a few groups of slender, irregularly staining bacilli that are not decolorized by 1 per cent alcohol." A guinea-pig was at the same time inoculated with the mixed bladder urine showing purulent flakes, and on January 8, 1908, Dr. Ophuls reported: "Guinea-pig shows marked tuberculosis of omentum, peritoneum, spleen, liver, lungs and lymph glands." Catheterization of ureters was then done by Dr. Rixford. The urine from right kidney showed pus corpuscles and tubercle bacilli; from the left kidney the urine was normal. The right kidney was therefore removed by Dr. Stillman on January 27th, and was found to contain two caseous nodules in its upper pole, both proved by subsequent examination to be tuberculous. The patient recovered promptly and remains perfectly well at this date.

Case 2. A man aged 49 consulted me on March 11, 1908, because he had been rejected for life insurance on account of pus in his urine. He considered himself perfectly well, had no increased frequency of urination, no dysuria, no discomfort of any kind and his general health was unimpaired. His urine, however, was very turbid and cloudy and showed an abundance of pus corpuscles but no casts. This condition of the urine was constant on repeated examinations. No mass could be palpated in either kidney region, and neither kidney was prolapsed. Physical examination was in every respect negative. Regular use of hexamethylenamine caused no decrease in the amount of pus. The man was therefore referred to Dr. R. L. Rigdon for catheterization of ureters, and this was done on March 25. From the left ureter, clear urine was obtained; the right ureter could not be entered. The mixed urine from the bladder was submitted to Dr. Ophuls and a guinea-pig injected intra-peritoneally. One month later the pig was killed and found to have general tuberculosis. The patient was therefore advised that he had tuberculosis of the right kidney and was urged to have the kidney removed. This he refused to do. July 21 I received a letter from the patient's physician in Oakland, Dr. E. G. Wood, stating that the man had developed some cerebral complication, with dazed mentality, imperfect speech, inability to articulate, lack of co-ordination in muscles, one dilated pupil and a train of symptoms suggesting cerebral hemorrhage. Knowing the kidney condition, I felt convinced that there had been a secondary tubercular involvement of the brain and so advised Dr. Wood. The patient died August 20. After the onset of his cerebral complication in July, he gradually grew worse, with a train of symptoms indicating an organic brain lesion. He lost all idea of time and place, had marked aphasia and incontinence of urine. On the morning of August 19 he lost his

sense of hearing and rapidly lapsed into unconsciousness, dying early on the morning of the 20th. Autopsy showed the left kidney normal, but the right one practically destroyed, the whole parenchyma being converted into a pus cavity. In the brain, the right hemisphere was normal, but the left contained quite a large tumor with degeneration of the brain tissue about it. Specimens from kidney and brain submitted to Dr. Martin Fischer for pathological examination showed both conditions to be tubercular.

#### Discussion.

Dr. Krotoszyner: Dr. Cheney reported in his paper a case of renal tuberculosis which was quickly followed by fatal tubercular infection. I have seen similar cases; that is, cases that came to the physician too late for successful treatment and which were not diagnosed correctly until general infection had set in. It is unfortunately true that the correct diagnosis of renal tuberculosis, especially in its incipency, is rarely made. That may have its reason in the fact that the majority of patients suffering from renal tuberculosis offer a very good general appearance not suggesting the presence of such a grave lesion. The second reason for not recognizing renal tuberculosis is, that in almost all instances bladder symptoms exist which are diagnosed and treated as a single cystitis. The knowledge has not yet taken root sufficiently in the mind of the average practitioner that in the great majority of all cases urinary tuberculosis is a hematogenous affair which begins in one kidney and which is cured by a timely removal of that organ. There exist certain symptoms in renal tuberculosis which if correctly interpreted would permit the careful observer to arrive at a correct diagnosis. Upon close inquiry the patient will complain of sensations in either side of the abdomen, in the region of the ileum, the hip, the femur, the os sacrum, a cold feeling in one loin, unilateral pains in one-half of the bladder or one-half of the penis, the labia, or vagina. Sometimes these pains are only noticeable with micturition, sometimes they are independent of urination. The site of pain is always corresponding to that of the diseased kidney. Sometimes a very painful paroxysmal tenesmus with evacuation of a few drops of clear urine is complained of, a symptom upon which Israel lays particular stress. There also exist three typical points over the ureter of the infected side; next to the kidney pelvis, at its entrance into the bony pelvis and at its entrance into the bladder. If any or several of these symptoms are present and if a patient complains of frequent and painful urination without any palpable cause for this phenomenon (gonorrhea, catheterization), and if this bladder-infection is not improved by the usual treatment, and if besides that the patient complains of an occasional hematuria (appearance of one or a few drops of blood at the end of micturition), then a conscientious physician is justified in suspecting renal tuberculosis. If under such conditions at the hands of a well trained urologist a cystoscopic examination would be made, by which the source of the existing pyuria could be traced to one of the kidneys, and if the centrifugized kidney-urine would be injected into a guinea-pig, then the diagnosis of unilateral renal tuberculosis could be made comparatively early and the treatment would, in the majority of cases, result in a complete cure. In spite of what has been said of the efficacy of the tuberculin preparations in unilateral kidney tuberculosis, I am in favor of an early nephrectomy, a procedure which in the hands of experienced renal surgeons such as Israel, Albarán and others, has given uniformly good results.

Dr. Krotoszyner presented the right kidney of a patient with the following history. The patient is a young lady of twenty-one with a tubercular family history. After some great exertion during the time of the earthquake (carrying two heavy suit cases),



she became sick with pain in the right loin and bladder with frequent and painful micturition. The patient was seen by Dr. Bailly in February, 1908. He was able to catheterize both ureters; in both kidney-urines acid-fast bacilli were found, while none could be found in the bladder urine. When I was called in to cystoscopize the patient I was only able to enter the left ureter; the right ureteral orifice was hidden by a cauliflower mass measuring about one inch in diameter. Repeated attempts at ureteral catheterization on the right side were unsuccessful, including one attempt to enter the right ureter with the aid of chromo-cystoscopy (injection of 4 c.c. of a 4% indigo carmin solution). Although this test was made under general narcosis where ample time and opportunity was presented for careful observation of both ureteral orifices, I was not able to enter the right ureter. Although on the left side blue urine appeared 12 minutes after the injection of the colored solution, nothing suggestive of a ureteral orifice was noticeable on the right side. Dr. Bailly refused to operate, although a very much enlarged kidney could be palpated on the right side, and though I was reasonably satisfied of the existence of a rightsided renal tuberculosis. The patient went home and Dr. Bailly went to Europe. During his absence the patient's symptoms deteriorated to such an extent that she decided not to wait for her physician's return, but entered St. Mary's Hospital, where I found her looking very well but complaining of frequent and very painful micturition. Urine cloudy, microscopically containing abundant pus cells, many blood and round epithelial cells (kidney epithelia). The right kidney was palpable and very much enlarged. The temperature varied between normal and 101°. Patient had gained in weight of late. Cystoscopic findings about the same as noted above, except that the fungus in the right ureteral region had grown in size. All attempts to find and enter the right ureter by a catheter were futile. I therefore left a large ureteral catheter for some time in the left ureter collecting the urine from the right kidney by means of a bladder catheter. Two guinea-pigs were inoculated with the sediments of either urine, and Dr. Ophuls reported that the pig inoculated with urine from the bladder showed typical tuberculosis of peritoneum, spleen, liver, lymph glands, etc., while the guinea pig inoculated with urine from the left kidney showed no tuberculosis. Upon these findings a nephrectomy was made on the right side and the kidney removed which I have the honor to present to you. Dr. Ophuls reported as follows upon his examination: Calcified caseous area in one of the calices surrounded by hard white tubercles; many grayish white submiliary nodules in renal pelvis. Sections show much new formed granulation and cicatricial tissue. In adjoining kidney tissue many tubercles composed of large epithelial cells, many large giant cells of Langerhans' type. No caseation in separate nodules. Similar nodules in renal pelvis. Diagnosis, old stationary tuberculosis of kidney.

Dr. G. L. Eaton: Dr. Cheney spoke of the injection of tuberculin for diagnostic purposes. I have witnessed on one or two occasions this process of diagnosis, and I find that from the injection of tuberculin you will have, providing the case be tubercular, considerable reaction, and we are liable to light up foci to activity in other parts which might prove very serious to the individual. There are other methods in the diagnostic line at present for bringing out the differential diagnosis, such as the application of a 1% tuberculin solution upon the scarified arm, whereby if the case be tubercular, the reaction appears within 24 hours and the patient is not subjected to any serious result. Then, if you care to use tuberculin as a therapeutic measure, you will not be required to wait for all the symptoms produced by the injection method to pass over, and at the same time your patient is safe for the time being.

Israel has brought out a very interesting diagnostic differentiation. He injects the tuberculin in minimum doses so as to set up a proliferation of the bacteria in the kidney; he then catheterizes both ureters. If he finds an increased amount of bacteria or leukocytes from the two kidneys, it is a question whether it is advisable to remove the one individual kidney that is at fault for fear there may be an extensive focus in the other, as it is next to impossible by catheterization to determine how extensive the trouble may be. With ureteral catheterization, you will be able, on different occasions, to get urine free from pus from a kidney, and on the following day, or in fact a few hours afterwards, it will be purulent. I remember one case in particular, where the catheterized a. m. urine would be free from pus, but in the afternoon, when the temperature would start up, I would get purulent urine from the same kidney. So far as ureteral catheterization is concerned, we cannot rely upon it from a diagnostic standpoint as to the amount of tubercular degeneration that has taken place. Further, we cannot expect from these new methods of tuberculin vaccination to differentiate the unilateral or bilateral infection only in the way hereinbefore mentioned.

Dr. Stanley Stillman: So far as the question of an ascending or descending infection is concerned, my own experience has been decidedly such as to lead me to believe tuberculosis of the kidney to be a hematogenous infection, and if the bladder is affected at all it is secondary. I have seen primary tuberculosis of the bladder in but very few cases, in fact two only, and in neither of these cases was there any renal tuberculosis following. One of these cases was very interesting, being a man who weighed 210 pounds, the picture of robust health, who was brought to me on account of a sudden bladder disturbance and the passage of blood in the urine. We attempted to do a systoscopic examination, but the urine was so full of blood that it was not successful. We finally succeeded in getting a picture of what we thought to be papilloma of the bladder. We opened the bladder, but no papilloma was found. The whole bladder was as red as fire and the condition was not recognized by either Dr. Rigdon or myself; there was nothing suggestive of tuberculosis. The urine had been examined and tuberculosis had been thought of, but no bacilli were found at any time on repeated examinations. A guinea-pig was inoculated just because we did not know what else to do. The bladder was treated as a case of acute cystitis. The man had only recently been married and was a young fellow of 23 or 25 years of age. On account of the distress and the intense pain with a persistent hemorrhage, the bladder was drained for more than three weeks; at the end of that time we got a report that the guinea-pig had decided tuberculosis in all organs. That was the first line we had on the diagnosis. I left for Europe at this time, but the patient was subsequently given tuberculin treatment. The bladder opening did not heal and a fistula followed with subsequent tubercular peritonitis. The man is now in good condition and at no time has there been any sign of kidney involvement. If that man did not have an ascending infection I do not see how any one can have. I have seen a number of cases of primary tuberculosis of the kidney. The interesting feature is that, although you may have quite an amount of cystitis around the mouth of the ureter even to the size of a dollar, and

the ureter itself one-half as large as a lead pencil and the wall studded with tubercles the cystitis heals after nephrectomy. Of a number of these cases after removal of the kidney I have seen but one in which there was any subsequent trouble with the ureter or the bladder. Tuberculosis of the ureter and bladder subsided entirely after the removal of the affected kidney. In a case of which Dr. Cheney spoke we left the ureter cauterizing it with pure carbolic leaving it projecting  $\frac{1}{2}$ " below the lower angle of the wound so that we would have no difficulty in finding it. The patient was not very robust and it seemed unwise to dissect the ureter and remove the vesicle end of it through the vagina as would have to be done. I saw this patient two or three months after the operation and the mouth of the ureter was oozing a flocculent material suggesting a tubercular discharge. The ureter was again mopped out with a probe of carbolic acid and it is now more than a year and a half ago and there has been no further trouble. There was a patch around the orifice of the ureter as large as a dime, bright red and very distinct with the cystoscope. There have been no further symptoms of bladder tuberculosis. I had another case of primary tuberculosis in the bladder of a woman whom I treated by drainage and I drained the bladder for a month or six weeks at a time on three different occasions deliberating making a vesico-vaginal fistula giving complete rest and drainage to the bladder and although my results were not satisfactory at the time, still the girl has entirely recovered from her bladder tuberculosis and it is now four or five years since I discharged her. She shows no sign of kidney tuberculosis. I have seen other cases which have convinced me that bladder tuberculosis very seldom involves the kidney and very frequently a vesicle tuberculosis secondary to a renal tuberculosis will subside. The surgical question of the removal of a portion of the kidney is interesting and possibly if we can split the kidney and determine that the upper pole is normal and healthy and shows no abscess or infection, it ought to be saved as we would do in similar operation on any other organ and not sacrifice the entire kidney. So far, however, the results have not been encouraging. The operation itself in those cases in which the disease has not reached the suprarenal tissues and in which there is no infection of the suprarenal tissues, is not at all difficult. On the other hand, where the disease has reached the suprarenal tissues and where it is difficult to loosen the kidney, I have found the operation as difficult as anything I have ever undertaken.

Dr. Cheney, closing: With regard to the use of tuberculin I have never seen any bad results from it. I meant to imply in my paper that it was only one method of diagnosis and not to be depended upon alone any more than the vesical, mechanical or microscopical examinations. There is only one conclusive test and that is the guinea pig test. I had a case recently in which I used tuberculin where I had a decided reaction, not only local but focal. I made a mistake in this case in using it before the ureters had been catheterized. The attempt was made a few days later to catheterize but was unsuccessful. Following tuberculin this young lady had attacks of renal colic on the left side, with pus and blood in the urine, but the urine could not be obtained by catheterization after the tuberculin had been given; since that time the left ureter has been successfully catheterized. Here we had the effects of the tuberculin upon the ureter, causing swelling and injection which interfered with successful catheterization; and on the other hand the collection of pus and blood following the reaction of the tuberculin.

## REPORT OF A CASE OF SOMNAMBULISM RELIEVED BY HYPNOTIC SUGGESTION.

By G. H. RICHARDSON, M. D., late First Lieut.,  
M. R. C., U. S. A.

The intense interest taken at present by the thinking public in the cure of disease by other means than the administration of drugs or by surgery, and which expresses itself in the rapid growth of such organizations as the "Christian Science Church" and the "Emanuel Movement," makes it incumbent upon the medical profession to study critically every morbid condition that is essentially functional in character and to use in the treatment of these disorders such measures as experience and scientific investigations have proven of value.

For a physician to consider contemptuously this subject shows him to be either arrogant or ignorant and in the mind of a conscientious seeker for information there would develop toward him, either a sense of resentment or a feeling of disgust.

I have reported this case with a view of stimulating further investigation in similar conditions and to anticipate the charges of indifference and prejudice, which are already being made in some quarters, to the detriment of our profession.

Our patient pronounces his name something as follows: "Marusa hyusa waguny, Baraya wanayo malingo maderix." The name which he uses to sign the pay-rolls of Troop —, — Cavalry, U. S. Army, is W. S. —, as the surname is in some way a modification of his Arabic birthright.

He was born on the 28th day of December, 1864, in Kelo-majaro Land in Central Africa, which is about 2000 miles from the mouth of the Zambesi and 80 miles south of the Great Desert. This country is even now uninhabited by white men and is to be included in the itinerary to be taken by Mr. Roosevelt when he seeks in Central Africa the haunts of the largest wild animals now known to exist.

His father was a native of Eden on the Arabian Gulf, where, as a young man, he was engaged in a continuous struggle against Turkish aggression. Forced by the fortunes of war to leave Arabia, he went to Pretoria, South Africa, where he married a lady born of Arabic and Holland-Dutch parentage. Naturally nomadic in character he took his bride, with about eighty camp followers, to the country before mentioned where he became engaged in the killing of elephants, and from the ivory thus furnished derived a considerable income. Here nine children were born of whom the subject of this article was the eighth.

The lad grew therefore practically in the wilderness, acquainted with the ways of the forest and the excitement of hunting. He often accompanied his father on the excursions necessary to procure the elephants and on one of these, remembers meeting Sir Henry Stanley, when the great explorer was making his fourth expedition. When he was eleven years old he was sent to Cairo, Egypt, to be educated, and here he remained for two years. From that city he went to Germany returning when

sixteen to the wilderness where for three years more he joined with his father and brothers in the search for ivory. At nineteen, his father having selected for him a military career, he went to Constantinople where for three and one-half years he attended the Turkish Military College and from which he graduated with a commission. He was assigned for duty with troops delegated to subdue the Armenian Revolt. Being horrified with the measures taken to subdue these people—and having trouble with his superior officers, he deserted the Turkish Army and in the disguise of a peddler fled to Greece.

After wandering through Northern Africa for nine months he returned to his father's home only to leave soon for fear of apprehension by Turkish spies. He "treked" across Central Africa with a small band of natives reaching Kimberly, South Africa, when about twenty-three years old. He remained there for about six months and being well supplied with money by his father, left for the United States on a trip of pleasure and education. He traveled extensively for several years over this country and across the Pacific, spending one year in China. Here rumors of the threatened Anglo-Boer war reached him and he hastened back to South Africa, arriving there three months before hostilities were declared. He immediately,—with his relatives,—joined the Boer Army, receiving his baptism of fire at Spion Kop where he was slightly wounded and where his father, one brother and two sisters were killed. To divert, he states that in his regiment one-fifth were women who joined with their fathers and brothers in the hardships of the campaign. At the battle of Modder River he was severely wounded and captured by the British forces, sent to Ceylon as a prisoner of war, released in July, 1902, at the close of the hostilities.

He came to the United States again in January, 1903, and in the spring of 1906 enlisted at Fort Logan, Colorado, as a recruit for the Coast Artillery Corps at San Francisco, California, where after serving three months, he was sent to the hospital with muscular rheumatism of both legs.

While here he awoke one night to find himself on the beach near "Harbor View"—a distance of about 1000 yards from the hospital,—clad only in a pajama suit. Realizing the character of his offense in being absent without leave, he hid himself, returning stealthily during the night, obtained his clothes and left the hospital.

Embarrassed and confused by these events he went to Monterey, California, where he enlisted in Troop X, Y Cavalry, U. S. Army. Naturally, he was soon apprehended for fraudulent enlistment, tried and convicted; but owing to his excellent character and the peculiar circumstances, his sentence was mitigated to twenty-one days' confinement in the guard house. His enlistment expires in July, 1909, and he is desirous of remaining in the Army, having been educated for the military service and having no other trade or profession.

A physical examination shows him to be well developed and muscular in appearance. He is 66½ inches tall and weighs 165 pounds. There are no

stigmata which would show a nervous temperament except a rapidity of speech which might be considered as due to his nationality. All the organs of his body seem to be functioning normally and there is no evidence of constitutional disease. He is of fair complexion with brown hair and light eyes which show his Dutch extraction and that his father was evidently from the north of Arabia. He speaks the German, Turkish, Arabian and English languages, and is versed in the varied dialects of the natives of Central Africa.

He is rather reclusive in his nature, preferring to spend his time in reading rather than in the companionship of other soldiers. He has never suffered from a severe illness, but is frequently troubled with muscular pains in the legs which he attributes to hard military service in Armenia. When about four years old, he began to have somnambulistic attacks which, so far as he knows, are of no definite causation. His father was afflicted with the same trouble in a moderate degree and it is reasonable to suppose that heredity has some bearing upon the formation of the habit. As a child he was compelled to be tied in bed to prevent wandering away in his sleep. He states that the attacks were more frequent in the rainy season and during the full of the moon; that they recurred with short periods of intermission until he was twenty-six years old. At school he was handcuffed every night to keep him confined in his room. He never fell or hurt himself during the attacks; and at all times he was capable of being controlled by any person whom he recognized as having authority over him.

For eleven years, the interval between his twenty-sixth and thirty-seventh birthdays, he had no attacks. They began again when he was a prisoner in Ceylon and have gradually increased in severity and frequency until during the past six months they occur on the average of every other night.

These attacks are seemingly influenced by the character of work which he has performed during the day. If he has, for instance, been cleaning his equipment he will endeavor to do this in his somnambulistic state.

He usually retires about 7 o'clock in the evening and immediately falls into a heavy, almost unnatural slumber. In a short time,—about fifteen minutes after he is asleep,—he will arise from his bed and wander off to the stables, or as noted in his personal history, to some place distant from his home.

For some time he has been sleeping in a room near the stables which,—at bedtime,—are closed with heavy timbers to prevent him from leaving his abode.

His comrades describe many peculiar and almost impossible feats of strength that he has performed while in these attacks. He has been seen to throw a cannon ball weighing 56 pounds for 40 feet, to break large pieces of timber, to walk on his hands on the pinnacle of a slippery roof and many other incredible acts which in his waking moments he is unable to do.

His case was first brought to my attention during the latter part of August, 1908. It seems that he



had accompanied his troop to a "night-drill" which was held in the woods above the post. While remaining stationary and awaiting orders his troop commander saw him suddenly leave his position in ranks, and drawing his saber start in a mad gallop for an adjoining hillock in the open. Here he remained for some time, gesticulating wildly and singing at the top of his voice, a weird Arabic song. His commanding officer,—who had lately joined the troop,—desired to place him under arrest and take away his saber; but at the suggestion of one of the older sergeants deferred doing so until he should become more quiet. In the meantime, a sergeant with whom our patient was quite friendly, went to him and told him to go to the stables, put up his horse and equipment and go to bed. This he immediately did, without any show of remonstrance, and the next morning said that he remembered nothing of the occurrence,—save being sleepy while in the woods,—until he found himself undressed and in his own bed, a period of about two hours.

This took place on Thursday evening and on the day following I discussed at length the case with the officer, requesting that the man be sent to me for examination. I recognized, when talking with him and taking his history, the uselessness of drug medication, for this had been tried by the man himself on many occasions.

I concluded that the somnambulistic state was due to the influence of his "subconscious mind" upon a nature particularly susceptible and that if I could obtain the man's confidence I could suggest to him the fact that these attacks were unnecessary. I therefore made arrangements for another interview and believing myself competent to assist him, I placed him in a hypnotic state.

While he was in this condition, I authoritatively told him that these attacks were controllable and that, as a post-hypnotic suggestion, he should report to me 5 days later precisely at 10 a. m. I awoke him from his sleep and was glad to find that he came to my office at exactly the hour I had specified. When I asked why he had reported at the hospital, he could give no definite answer but that he "had an idea that I wished to see him."

Not being satisfied with my first effort and wishing to make a more pronounced effect on his memory, I again placed him in a hypnotic state and while in this condition I suggested that he would revert to that period in his life when the attacks had entirely left him and when for eleven years he was practically cured, insisting that, if he could be relieved for eleven years, the attacks were unnecessary and could be controlled.

I gave him another post-hypnotic suggestion which was again successful. Sufficient time has not elapsed for me to say that my efforts will be ultimately curative but he has had no somnambulistic attacks for several weeks, while before the treatment was instituted they occurred at least every other night.

The man realizes that his usefulness as a soldier depends upon his being entirely relieved of the habit and is working in complete harmony with me in

my endeavors to restore his control over his sleeping state.

Note: About eight months have elapsed since I last treated this soldier, and he ever since has been entirely free from his somnambulism. He informs me that his self-confidence and general health have improved, and that he is positive that he will never again need my services.

## REMINISCENCES OF TEN YEARS AS COMMISSIONER OF HEALTH IN CHICAGO, AND SUGGESTIONS FOR THE FUTURE.\*

By ARTHUR R. REYNOLDS, M. D., Chicago.

In April, 1893, I was first appointed Commissioner of Health for the City of Chicago, where that official, under the Mayor and City Council, is the supreme sanitary authority.

At that time the sewage of the city emptied either directly into Lake Michigan or into the Chicago River, which in turn emptied into Lake Michigan. The Illinois and Michigan Canal connected with the south branch of the Chicago River at Bridgeport, about two miles from its mouth.

In the early days of the canal there was a light flow from the lake through the Chicago River into the canal, on into the Desplaines River and thence toward the Mississippi River, thus reversing the current of the Chicago River. Large pumps had been installed at Bridgeport and the streams so augmented that for a number of years a flow was maintained from the lake to the canal in ordinary dry weather, but in times of fresher the whole corrupt contents of the river were swept into the lake. The water supply of the city came from the lake. Typhoid fever had been prevalent for years and reached its height in 1891.

It was generally recognized by physicians that something should be done to protect the public from the evil effects of drinking the impure lake water.

The ordinances said it was the duty of the Commissioner of Health to give the Mayor and City Council advice upon all sanitary matters, and without further consultation I sent an official letter to the Mayor and City Council recommending that the capacity of the Bridgeport pumps be at once doubled. To my mind this was the quickest way to safely get rid of the foul sewer water.

The next morning I learned by the newspapers that my communication had created something of a sensation, for we were on the eve of the opening of the great World's Fair. Early in the day I was summoned to the Mayor's office and asked by that official why I had sent a letter to the Council on the water supply. I answered that the people were sick and dying from the effects of drinking the impure water. The Mayor said, "Young man, don't you be so — anxious to find fault with our water supply. I have been drinking the lake water for forty years, and look at me."

That Mayor had more than a National reputation for mental acumen and intellectual attainments; the incident is recited only for the purpose of showing

\* Read before the California Public Health Association, San Jose, April, 1909.

the state of public opinion at that time with reference to water-borne diseases.

By interviews published in the daily press and weekly bulletins published by the Department, we pointed out on all possible occasions the danger of the water and recommended that it be either boiled, distilled or filtered before using. The newspapers printed conspicuously our daily analysis of the water and kept for a time standing on the front page the phrase "Boil the water" and in addition, gave the question frequent editorial emphasis. All of which was copied and reprinted in scores of other local publications.

Three or four years later, in order to determine what progress was being made in the campaign of education, a house to house canvas was made in a considerable area of the poorer parts of the city to learn what number of people were using raw, untreated water, and it was found that more than eighty per cent were using either boiled, filtered, distilled, or spring water.

In the year 1899 the Drainage Channel had not yet been opened, the capacity of the Bridgeport pumps had not been increased. The sewers still emptied either directly into the lake or the Chicago River. The mortality rate from typhoid fever had gradually dropped from 24.15 per 10,000 of population to 15.68 per 10,000 of population, a reduction of more than 72 per cent in eight years in the actual number of deaths occurring, notwithstanding an increase in the population of 30 per cent. In other words 1997 people died of typhoid fever in 1891 and 442 in 1899. Had the rate of 1891 continued in 1899 3984 persons would have died that year, leaving a balance of 1987 human lives saved, in one of the nine years in one disease, to the credit of public education.

With no little difficulty we started a Municipal Laboratory and undertook the inspection of milk. When the work began 40 to 50 per cent of the samples of milk collected for examination were found to be below grade. The percentage of samples found below grade soon dropped to 7 or 8. It came into the city by rail in haphazard fashion. The receiving stations and milk depots were untidy and unclean. There were three organizations of milk dealers looking only to the commercial side of their business and all in opposition to the ordinance. These soon came into line and became agencies for a clean and better supply. Stores and shops cleaned up. The railroads appointed agents whose sole duty was to look after the shipping of milk, and whole trains now carry nothing but milk. The most approved methods were gradually installed in many dairies, companies were formed and milk was bottled in the country in a sanitary way and shipped to the city on ice. Dairy Inspectors were later secured and sent into the dairy country to inspect the herds and to teach the dairymen. The dealers found with poor milk were fined from time to time, and occasionally a bad lot was seized and turned into the sewer at the receiving station.

In 1903 we began our efforts for a fresher supply of milk. Most of the milk is produced within 80 miles of the city. There did not seem to be any

good reason why milk obtained at night should not be served for breakfast next morning in the city. To do so would change the time of delivery by the farmers, time of shipment by the railroads, and the method of the city dealer. All our efforts in this direction failed. A fresher supply of milk is as far off as ever, although some do try to deliver twelve hours' old milk and some even six hours' old, but the idea did not seem to take root and all efforts to press it have since ceased.

In 1893 there were 12,363 deaths of children under five years of age (the milk feeding period of child life). In 1905 in spite of the great increase of population, there were only 8512 deaths of children under five years of age.

When the antitoxin treatment for diphtheria was introduced, there was great scepticism with regard to its use and considerable open opposition. The department, as soon as a supply could be obtained, placed it at the disposal of physicians at cost price and began its use. Careful records were kept of the cases treated by the department physicians, and it soon appeared that there were no deaths from diphtheria when the remedy was used on the first day of the disease, and that the ratio of cures diminished with each day's delay till its use on the fifth day or later had little effect. These records were kept with care and at the end of three years the brute force of the figures compelled the universal adoption of antitoxin in the city, and now nowhere in the country is diphtheria a menace if promptly recognized and a proper dosage of antitoxin administered. The total number of deaths from diphtheria in Chicago in 1895, the year antitoxin was introduced, was 1420. The total number of deaths from diphtheria in 1905 was 426.

Boston was the first city in the country to take up the medical inspection of public school children, and Chicago was the second. The work has since spread over the entire country, and is properly regarded as one of the most useful advances, and has become indispensable wherever its value is known.

Smallpox was left us as a heritage from the World's Fair in 1893 and caused 1033 deaths in 1894. Vaccination had long been neglected. Certificates of vaccination were one of the requirements for admission of children to the public schools, but we soon found that physicians were very careless in issuing these certificates. An attempt had been made to vaccinate and the certificates without knowing whether the vaccination had been successful or not in very many cases. Surgical cleanliness in preparing the vaccine and in performing the vaccination had not yet been introduced.

It was well into 1894 before we could get money enough to undertake the vaccination of the entire city. When that was accomplished the danger was over.

An up-to-date hospital for the care and isolation of smallpox was one of the net gains of the epidemic.

At that time the vaccine was sold on bone points. Much of it was inert and there were many infected arms resulting from its use. With the introduction of glycerinated vaccine lymph we broke away from

the use of the harsh and faulty word virus. Every purchase of the new lymph before it was accepted or paid for was tested in the laboratory for the presence of septic organisms, and next was tested clinically by the vaccinators as to its potency. Surgical cleanliness in performing vaccination was insisted upon, all of which is the rule to-day.

A few years later a mild form of smallpox became general in the middle west and was continually being introduced into Chicago. We found it necessary to begin a campaign that would cover the entire area tributary to Chicago.

We called a conference of the officials of all the railroads running into the city and readily secured their aid and co-operation. We published in 1901 what we called the vaccination creed. The railroads printed it conspicuously on cardboard and posted it in most instances in every station on their various systems. We posted it in the city. The creed is still in use, doing good service, and answers substantially every question that may arise with reference to vaccination and its utility and is here repeated:

#### The Vaccination Creed.

After many years of experience with smallpox and Vaccination, the Chicago Department of Health hereby declares:

*First.* That true Vaccination—repeated until it no longer “takes”—*always* prevents smallpox. *Nothing else does.*

*Second.* That true Vaccination—that is, vaccination properly done on a *clean* arm with *pure*, potent lymph and kept perfectly *clean* and *unbroken* afterwards until the scab falls off naturally—never did and *never will* make a serious sore.

*Third.* That such a Vaccination leaves a characteristic scar, unlike that from any other cause, which is recognizable during life and is the *only* conclusive evidence of a successful Vaccination.

*Fourth.* That no untoward results ever follow such Vaccination. On the other hand thousands of lives are annually sacrificed through the neglect of vaccination—a neglect begotten of *lack of knowledge*.

The creed and a supplement giving full information of the proper method of vaccination and other data was printed in circular form and distributed widely. The smallpox subsided promptly and vaccination was given such a boost that smallpox will not again for a generation be a menace.

In our smallpox hospital we took classes of students from the various medical schools and taught them to diagnose the disease and to treat it. None of them contracted the disease and none of them carried it to others.

We inaugurated and conducted for the Trustees of the Sanitary Districts a series of chemical and bacteriological examinations of the streams containing the waters of the Drainage Channel before it was opened and for nearly a year afterwards as far as St. Louis, Missouri, in its flow to the Gulf, on a scale never before attempted. The results were compiled and published and were the basis of the defense of the District when later the State of Missouri began action for damage which resulted in

the triumph of the District. It also demonstrated the wisdom of the founders of the Channel system of drainage for Chicago, who claimed that the waters between Chicago and St. Louis would be purified rather than polluted by the large dilution of fresh water from Lake Michigan and by oxidation and sediment as it traversed the 350 miles between. It also will serve as a guide to any part of the country interested in stream purification.

Circulars were prepared upon “The Hot Weather Cure of Infants and Young Children.”

“Restriction and Prevention of Consumptives.”

“Antitoxin Treatment of Diphtheria.”

“Advice to the Family in Cases of Contagious Diseases,” and many other topics. Some of them were printed in eight different languages.

We early learned that public health administration could never be in advance of the medical profession, and that the individual members of the profession as they brought their healing powers to the people, also formed a vast army of men on the firing line, teaching and preaching how disease may be prevented.

Public health service can only use in a public way the knowledge that the individual practitioner uses daily in his rounds. With this thought constantly in mind it was not difficult to have the profession as a unit at our back on all occasions. We succeeded in getting men of brains into our department; we were always happily able to avoid internal dissensions which made it possible to present a solid front to the enemy.

Time does not permit going into further details; nor does it seem necessary for the purpose at hand.

The logical deduction to be drawn from the foregoing is that the public can be educated in health matters by keeping everlastingly at it.

I do not for one moment claim that I did it all—I was but a cog in the wheel of the organization, every man and woman in it did their part, and each was a loyal enthusiast. I was out of office from June, 1895, to April, 1897, but the main structure of the organization was retained and the scientific features of the work continued.

The present Commissioner of Health has greatly extended the scope of the department and the future is bright for Chicago to retain the proud distinction of having the lowest mortality rate of any city of metropolitan proportions in the world.

Before closing, perhaps I may suggest a thought or two with reference to the future.

The protecting power of vaccination and the proper method of vaccination should be better taught in our medical schools.

The family physician should see to it that every child in the families who depend on him is successfully vaccinated and re-vaccinated when they grow up, and should impress also upon parents that it is as much their duty to protect their children from smallpox as to protect them from cold or hunger.

There is a vast army of people more or less vulnerable to diseases because of faulty nutrition. There is the under-nourished dyspeptic and also the over-nourished, both of whom have and usually are vio-



lating common sense both in the selection of the kind and quantity of their diet and in the manner of using it. Here again the family physician must be the principal agent for betterment, for it is often, if not generally, an individual matter.

The conviction has been growing with me that cow's milk is a very much over-estimated article of diet for children. We know it has caused sickness again and again. It has carried to the child almost every known contagious disease as well as the usual enteric diseases, because it is so easily infected and germ life multiplies in it so rapidly. It is a short lived product at best, and every physician has seen bottle-fed babies raised without it. The more I think of it, the more it seems that cow's milk as a diet for a child, instead of being a natural food is quite an unnatural food.

Nature provides that the milk go directly from the mother without change of temperature and sterile into the stomach of the offspring. All cow's milk is contaminated before it reaches the pail of the milker, even under the best conditions. In cities it is from 24 to 48 hours' old and even more before it reaches the child and has become a very different article since it left the udder of the cow.

If physicians skilled in the artificial dieting of infants will give us a substitute, and I feel sure they can, the whole expensive and vexatious question of a city's milk supply will vanish like a dream.

Nature seems to demand that children with teeth should use them upon a solid diet. Indeed mastication is necessary for the proper development of the teeth and the digestive secretions of the mouth. If the child is constantly urged to drink milk it is certain he cannot eat very much else.

It is rather sweeping to recommend the elimination of cow's milk in cities from the diet of children under five years of age, but the still high sickness rate and the still high mortality rate among the little ones is disconcerting and I feel certain that the use of milk is at the bottom of much of the trouble.

Many attempts have been made, especially in the old world, to lessen the terribly evil effects of venereal diseases, but with little gain.

It is my belief that these diseases, with the train of other diseases they cause, could be greatly reduced if not eradicated if the entire public knew as much of the evil they cause as do the medical profession. I further believe it is the duty of the medical profession in their daily practice, in communications to the daily press, by public lectures, and by every means of conveying intelligence, to enlighten the masses and put them on their guard. What education has done to lessen other diseases, it can do for these diseases.

If the temperance wave that is abolishing so many drinking places throughout the country should become universal and do away with the abuse of intoxicating liquors, syphilitic diseases would lose one of their strongest props.

In the State of Indiana a law is in force that authorizes the sterilization of "Confirmed Criminals, idiots, imbeciles and rapists." Eight hundred con-

victs have been sterilized under the law, two hundred of them at their own request.

The very simple operation of vasectomy will deprive a man of his power to procreate without loss of any other power or function. Oregon has recently passed a similar law.

The operation is so simple and safe, it is to be hoped that it will be speedily enacted in all states. Its application might be profitably extended to syphilitics and possibly to those suffering from other diseases that leave a poor health inheritance to offspring.

The practical application of the idea would in time weed out many of the weaklings, doomed to be victims of disease and early death, a menace to peace and a charge upon the public.

### BACKACHE.

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Backache is a complaint exceedingly common, and the cause of its origin is often difficult to determine. Nevertheless, it receives scant attention in the text books of medicine, and the various encyclopedias.

Many patients so afflicted visit our clinic. Frequently they have been previously treated for months and years for some lesion other than the true one, and it has often seemed that narrow specialism in diagnostic work has left so many border line gaps as to be responsible for the errors that have been made. This paper is an attempt to present a broad diagnostic scheme which has met with considerable success in the elucidation of the cause of backache in private and clinic patients and which was primarily evolved for teaching purposes.

Running longitudinally through the center of the back is the vertebral column. Wonderfully flexible during life, it is made up of a series of superimposed bones separated and united by intervertebral discs, and a great number of ligaments. Between the processes of these bones, and connecting ribs to vertebrae, and ilia to sacrum are joints of different varieties. Large sheets and strands of muscles and extensive fibrous aponeuroses clothe the bony framework. Hanging within the vertebral canal, surrounded by its membranes, is the spinal cord, and coming off in pairs at various levels are the nerve roots which unite and issue as nerve trunks through comparatively small apertures formed by the vertebral articular processes. The posterior divisions of these nerve trunks mainly innervate the back tissues, and it is in their area of distribution that back pains are commonly located. These posterior primary divisions descend (as do the lateral branches of the anterior primary divisions of the dorsal nerves) some distance before they innervate the overlying integument, and thus it is that the skin zones supplied by the nerve roots or spinal segments run more or less transversely.

At each spinal movement there is a compression of one portion of the intervertebral discs and a stretching of the other; an approximation of the origins and insertions of some ligaments, a separa-

tion of others; an active contraction of some muscles, an elongation or relaxation of others, and in studying back pains associated with movements it behooves us to bear these facts in mind. Flexion and extension of the spine are very free in the region of the third to fifth lumbar vertebra, and it is owing chiefly to movement at this locality that patients overweighted in front are able to throw their shoulders back, and thus preserve their equilibrium, and when such flexion or extension is painful or limited it is this area that we first investigate.

Lateral movement in health is fairly extensive and is limited by the resistance of ligaments of the other side, and by the approximation of the transverse processes of the same side. It takes place along the whole spine. In certain cases of osteoarthritis this movement is the one mainly hindered.

Rotation of the spine takes place chiefly in the dorsal region, and when it becomes painful or limited we there seek the cause.

It is the lymph which conveys to the tissues of the back as to all tissues, their nutriment and oxygen, and removes from them their waste products of fatigue and metabolism. The rate of flow of this lymph depends indirectly upon the cardio-vascular activity, and its composition upon the composition of the blood. Muscular contractions and massage undoubtedly accelerate the lymph flow. Thus it is that people with an impaired cardio-vascular apparatus which slows the lymph flow may complain of fatigue, and if the use of the fatigued structures be persisted in, of dull pains before the more readily recognized symptoms of heart impairment, such as dyspnea, etc., show themselves; I have seen more than one case of backache apparently due to slowness of lymph flow in overworked tired muscles rapidly improve on the administration of strophanthus.

Similarly, in vitiated blood conditions, such as anemia, the composition of the lymph and its nutritive capacity are presumably impaired, and the same feeling of fatigue, and later of pain may arise in the overused muscles, and lead to a beginning of a vicious circle which is only relieved when the anemia is cured.

Back pains, like pains elsewhere, may not only be experienced in the structures actually at fault, but may be the result of a lesion which is acting upon the nerve root or nerve trunk at some distance from the area where the pain is appreciated. Such a pain is termed a referred pain, and is well illustrated by the nerve root pains of meningeal inflammation or of vertebral disease.

There is another kind of pain best described as reflected pain which, felt in the body wall either anteriorly as belly pain, or posteriorly as back pain, or as both, results from a disturbance of the thoracic or abdominal viscera; of these pains we will speak later.

**Backache In the Acute Fevers.**—In the developing stage of some of the acute infectious diseases such as small pox, dengue, relapsing fever and influenza intense backache may be complained of, and in typhoid fever, diphtheria and tonsillitis inquiry will

generally elicit the information that some backache is or has been present. Whether these pains depend upon meningeal irritation, posterior root ganglia changes, or disturbed segmental irritability, or upon a lesion affecting the territory supplied by the posterior primary divisions of the lower dorsal nerve trunks it is difficult to say. Of much interest in this connection is the fact attested to by Head, that his brother, sick with typhoid fever, marking out the sites of his pains, dotted out areas which corresponded to the maximum painful spots in the body wall zones supplied by the different cord segments.

The fact that these pains are only an incident in the development of an acute infectious disease is readily recognized. They are best treated by lead and opium fomentations, and if they be severe, by a hypodermic injection of one-sixth of a grain of morphine. The differential diagnosis of these infectious diseases is outside the scope of this paper.

Bearing the above in mind, there are a series of questions which the clinician should systematically endeavor to answer in investigating patients with backache.

1. *Is there any disease of the spinal cord, the spinal roots, or of the cord membranes?*

The pain associated with spinal disease is commonly referred to the distal terminations of the pain fibres that are irritated. If, however, the membranes of the cord be involved, localized pain may be complained of in the neighborhood of the lesion. This localized backache pain is commonly unaccompanied by rigidity of the vertebral column, or by local bone or vertical compression tenderness. The recognition that it is of cord origin will depend upon its association with pain in distal parts of the body due to the irritation within the cord of longitudinally-running nerve fibres which carry centrally travelling sensory messages; and with nerve root pains due usually to meningeal or vertebral involvement, or upon the discovery of some loss of muscular power, or some impairment of sensibility, or abnormality of reflexes in the areas innervated by that section of the cord. The root pains are frequently very intense, and patients describe them as being shooting and lightning like in character. They occur in definite anatomical zones and tend to encircle half of the trunk, or to shoot into the arm or leg. Occasionally they may be particularly evident in the area of supply of the corresponding posterior primary division.

Such root pains may form the sole complaint of the patient and indeed may be the initiatory symptom of a later developing cord or vertebral lesion.

The absence of rigidity of the spine and of vertebral tenderness will speak in favor of the root pain being due to involvement of the cord or meninges rather than to disease of the vertebrae. The lesion may be due to inflammation, or to syphilis or to tumor growth. In such cases the nervous system must be repeatedly examined and a primary growth looked for, as the development of optic atrophy, or of a syphilitic neuroretinitis, or the finding of a small mammary carcinoma may

plainly point to the diagnosis. If the search be fruitless, anti-syphilitic treatment is in order, and I have seen a case of intense root pain, back and front, of months' duration, yield to vigorous mercurial treatment in the absence of all suggestive history or other corroborative findings.

The finding of an increased number of lymphocytes in the cerebro-spinal fluid withdrawn by lumbar puncture will speak strongly for a diagnosis of syphilis in suspicious cases. Since, by the method of Fuchs and Rosenthal, only a single drop of fluid is required, no disturbing after results are to be feared.

If an attack of neuralgic pain be exhibited in, and confined to an area supplied by one or more single nerve roots, and be associated with some fever, and an herpetic eruption accompany or later follow, we recognize an involvement of the corresponding root ganglion i. e. herpes zoster. In two patients whom I attended, and in whom such a neuralgic pain, chiefly located in the posterior primary division district of a lower dorsal root zone, persisted, I suspected that the neuralgia was of ganglion origin though no herpes occurred. In one of these cases a herpes of a lower segment later developed. Hot air applications were much appreciated by these patients, and seemed to greatly diminish the acuteness of the neuralgia.

#### 2. *Is there any disease of the vertebral column?*

Patients with backache due to disease of the vertebral column may, from the clinical standpoint, be divided into those who do, and those who do not exhibit deformity.

In the first class we recognize at a glance—

(a) The deformed spine of spondylitis deformans with its general posterior convex curvature and its diminished movement. Though pain, local, and of a root character may be present, there is no, or little, tenderness to vertical pressure and commonly osteo-arthritis changes are present in other joints.

(b) The localized, abrupt, angular curvature due to caries of the spine in which backache and root pains are common, and in which vertical pressure is bitterly resented.

In the second class of patients little or no general or local deformity is evident, and the examination of these patients involves an inquiry for root symptoms, a testing of the mobility of each point of the spine, of the sensitiveness of the vertebrae to vigorous tapping, to vertical pressure, and to pressure on the transverse processes. If in a region where back pain is complained of, rigidity of the spine, either on sagittal or lateral flexion be evident, and there be associated with it root pains or local vertebral or vertical pressure tenderness, or pressure upon the transverse process cause pain, we assume the presence of a localized vertebral lesion. If this condition rises acutely with fever and a leukocytosis, and the back pain be intense, and the slightest movement cause great pain, and there be great sensitiveness to tapping of a vertebra, and to vertical pressure, we suspect an osteo-myelitis of a vertebra, and if an abscess later develop our sus-

picion is confirmed. The treatment is naturally surgical. If similar symptoms and signs are exhibited after an attack of typhoid fever we recognize it as due to a typhoid spondylitis. The patient should be treated with fixation of the affected part and rest, and recovery will slowly but surely ensue. The typhoidal infections do not tend to suppurate.

If the disease be of a chronic nature, and back pains be or be not associated with root pains, and be accompanied by localized rigidity, and especially if percussion or vertical pressure tenderness be present, we diagnose either caries of the vertebra or a localized osteo-arthritis.

An abnormal projection of one spine, however slight, the presence of tuberculosis elsewhere, or a loss of motility or of sensation in the peripheral parts due to cord complications, will suggest its tuberculous nature.

The absence of any projection, the absence of any tubercular lesion elsewhere, or the presence of creaking on auscultation of the moving vertebrae, or the presence of osteo-arthritis changes in other joints, will suggest osteo-arthritis. If the osteo-arthritis process is limited to the bodies of and the discs between the vertebrae, no root pains are present; compression vertical tenderness is best sought for in such instances with the body slightly flexed forward. If the lesion be in the region of the inter-vertebral foramina, root pains are commonly present; compression vertical tenderness is best sought for with the body slightly flexed backwards.

I have found in doubtful cases a radiogram of the area involved of the greatest service in the differentiation of these two conditions, as the pictures obtained are often quite characteristic.

Both these lesions demand fixation of the affected part, plenty of good food, and the eradication of any complicating septic areas in the mucous membrane or elsewhere. Many of these cases of localized osteo-arthritis masquerade under the name of lumbago, and especially is this so when local pain and some rigidity are chiefly or alone evident.

If the pain arises in one part of the spine and be accompanied by root pains and some rigidity in a patient who has had a primary cancer, a secondary growth is to be suspected. A radiogram will confirm the diagnosis. We can only hope to allay the patient's misery by liberal injections of a morphine salt.

If the back pains arise during pregnancy, and give rise to considerable vertebral pain on movement which is relieved on rest, the question of osteomalacia must arise, and if later pains develop in other bones, this suspicion is strengthened. The X-ray picture is very characteristic. The treatment is that of osteomalacia.

#### 3. *Is the back pain due to any disease of the framework of the back other than the vertebral column?*

If the back pains be located in, and confined to, the region of the ribs, scapulae or ilia, or to their connections with the vertebral column, these structures must be thoroughly investigated, by palpation,



by studying the active and passive movements produced in the locality, and if possible by the X-ray, for though diseases of these structures appear to be comparatively rare, yet there is no fundamental reason why the arthrodial joints between the articular processes or those between the vertebræ and ribs should not be the occasional seat of an acute arthritis, or why an acute osteo-myelitis or periostitis should not occasionally manifest itself in the vertebræ, ribs, or pelvic bones, just as it frequently does e. g., in the tibiæ, and I would advance as a working principle, the overlooking of which often leads to error, that these joints, bones and tissues possess no specific immunity from the diseases manifested by similar structures elsewhere in the body.

Thus I remember one patient coming into hospital complaining of great lumbar backache. There was marked rigidity, he could not move because of the intense agony, and turning him was almost equally painful. One of the lumbar vertebræ was excessively tender. He ran an acute fever and exhibited a marked leukocytosis, and later a fluctuating inflammatory swelling appeared. If similar symptoms and signs had developed in the region of the tibia a diagnosis of osteo-myelitis would have been made at once, but the unusual situation had led the attending physician astray.

Again I remember another patient who developed an extremely painful sensitive area corresponding to the junction of the transverse process and rib, a pain which the rib movement intensified, and the anatomical fact that an arthrodial joint existed in this locality had escaped the recollection of those having the patient in charge.

Of particular interest at the present time is the relationship of abnormal sacro-iliac mobility to backache. Goldthwait, the pioneer in this particular field, attributes many backaches in women to a sacro-iliac luxation. The laxity of the connections is particularly apt to develop or become intensified, he thinks, during pregnancy and at the menstrual periods; or it may result from trauma, general weakness or some definitely known pathological process. The most common complaint of these patients, he says, is backache, referred at times definitely to the sacro-iliac articulations but often simply to the sacrum. "This backache is usually worse on lying upon the back or with any back-straining exertion or occupation carried to the point of fatigue." Referred pains are, he claims, quite common, especially in the areas innervated by the lumbo-sacral cord. Hypertrophic osteo-arthritis of these joints may produce similar backache and similar referred pains. He recommends correction of the luxation if any be present, and fixation by brace, webbing or plaster jacket.

Since the publication of Goldthwait's papers, I have been on the lookout for such cases, and I have seen four patients who presented many of the symptoms and signs described in his communications to which I refer those interested. Radiography however, showed in two of these patients spondylitis, in one accompanied by an osteo-arthritis of the fourth and fifth lumbar vertebræ. The third

patient had a marked lesion of unknown character of the lower lumbar vertebræ, and of the sacro-iliac joints. The fourth patient is still under investigation.

Two other patients complained of backache over the region of these joints, and pressure tenderness here was quite marked. One patient was a lady with Bright's disease and enteroptosis. Her backache had been cured for a time by fixation of the kidneys. The kidneys had again become loose. A properly adjusted corset again relieved the backache. In the second patient massage of the distended vesiculæ seminales immediately relieved the pain, which would again recur on their distension, to be again relieved by stripping. He had had gonorrhea. I believe his pain was a reflected pain due to involvement of the vesiculæ seminales.

We may say, the part played by abnormalities of these joints in the production of lumbar and sacral backache, is as yet unsettled, but they should be investigated clinically and radiographically in all patients presenting suggestive symptoms or signs, and Kelly has given this sacro-iliac strain quite a prominent place in discussing backache in his book "Medical Gynaecology."

4. *Is the pain located in, produced or intensified by, the contraction of muscles, or the stretching of ligaments, or fasciæ?*

It is the active approximation of the origins and insertions of inflamed muscles that produces muscular pain. Such a movement generally relaxes fascia and ligaments in their immediate neighborhood. Conversely the movements that produce stretching of ligaments and fascia are accompanied by relaxation of the immediately adjacent muscles, and such relaxation relieves muscular pain though it may be re-excited if the stretching of the muscle be extreme.

It is the anterior abdominal and psoas muscles that contract in anterior flexion of the trunk, but it is the posteriorly situated ligaments that are elongated. In extending the trunk, the back muscles contract; the anteriorly placed ligaments are stretched. If the location of the pain be such that it may be ligamentous or muscular, and by passive posturing the same pain is produced as in active movement, we assume the pain to be ligamentous in origin.

It is difficult to passively produce active postures of the trunk, but we can usually place the patient in such a position that an actively produced posture can be passively maintained, and thus muscular pain is relieved, ligamentous and fascial pain persist.

All such muscular and ligamentous pains are loosely catalogued as instances of lumbago, and into the medley creeps many a case of local osteo-arthritis of the spine. Strange to say, there is a general impression amongst the laity that these pains are always indicative of faulty kidney action. This was lately strikingly attested to in a letter from a doctor in a mining camp who desired to be referred to some literature on backache as it was such a common complaint amongst the miners who always attributed it to some kidney ailment.

I would classify these cases of backache—

(a) Backache arising in posteriorly situated ligaments or fascias in individuals who work with forward flexed backs. Such backache is bilateral and located in the lumbar region. I believe it to be mainly due to strain; the pain is produced or intensified by forward flexions of the body, and bending backwards relieves rather than produces it. It is particularly common when such work is first assumed, but after a time the soft structures develop a power of adaptability. If the strain be slight, exercise and massage will aid in developing this field of response, but if the stress has been too severe, or if it occur in those previously used to such work, rest on the flat of the back is the speediest mode of relief, and a warm lead and opium application will very frequently quickly relieve the pain in the now resting structures.

(b) Backache in some area which, however, develops apparently without cause, or maybe is produced or intensified by raising the trunk from a forward flexed position especially if the movement be resisted. It is seemingly muscular in origin, and is unaccompanied by fever. It depends, I believe, upon toxemia, and is particularly associated with a perverted digestion. The slight localized attacks are often quickly dissipated by measures which change the lymph flow in the painful area, such as massage or hot air applications. A dose of castor oil or a mercurial purge should always be administered and rapid amelioration ensues. The Bier hot-air douche is of much value as an adjunct in treatment. If a systemic toxemia, such as lead poisoning, be present, or the patient be taking too much santalwood oil, the intake of the poison must of course be stopped and its elimination aided.

(c) Back pains occurring as a result of a sudden strain during the lifting of a heavy load. They are common in lumber camps. They appear to be due to an injury of the deep, shorter muscles. They are best treated by rest with the body arched backwards, this position approximating the origin and insertions of the torn structures. At first rest on the Hunkin spinal support, and later adhesive plaster fixation will suffice to relieve these patients.

(d) There is the sudden, sharp, localized pain, the so-called "crick in the back." These cricks result from slight, often unappreciated traumata due to forcible or unguarded movements, or to long maintenance of strained postures. Most often they appear to arise in ligaments, or in the aponeuroses; sometimes in the muscle fibres themselves. The pain is so acute and intense that it seems out of all proportion to the supposed cause, and there is in such cases commonly present a constitutional state which is partly responsible for the lesion, it, so to speak, leading to a condition of the tissues in which they are prone to suffer much from slight traumata. A gouty or rheumatic diathesis, or a disturbed intestinal digestion, or the presence of a septic area elsewhere in the body may be found to be the determining factor; in other instances the crick may occur in patients with osteoarthritis of the vertebral joints. The treatment consists in resting the in-

jured structures, in limiting the food intake, in obtaining sharp purgation with blue mass, and in the administration of the wine of colchicum or of aspirin.

(e) There is a class of backaches in which the pain is evidently in the fascial structures and often unilateral, and the pain and tenderness seem to spread by continuity over the buttock fasciae. There is often a little temperature and the attack is apt to recur. It appears to be of the nature of a toxic fibrositis, sometimes of rheumatic, sometimes of gouty, sometimes of unknown origin. Salicylates, colchicum, rest, lead and opium applications, and the Bier hot air douche are the measures I have found of benefit in the treatment of these cases. Occasionally the tenderness and superficial pain are diffuse and spread forward to the front of the body or to the groin. The pain is often paroxysmal and tender neuralgic points are present where the nerve branches pierce the deep fascia, or where they can be pressed against unyielding structures. In such cases we are dealing with an intercostal or lumbo-abdominal neuralgia.

The tendency to recurrence of some of these varieties of lumbago may be combated by wearing a flannel binder round the loins; particularly is this so, if they are apt to develop after exposures to unusual changes of temperature.

Though patients with severe attacks of lumbago may exhibit a protective rigidity of the back muscles, local vertebral and vertical pressure tenderness, and nerve root pains are not present. If they develop it is not a pure case of lumbago.

##### 5. *Is there any static error?*

Static errors are responsible for many cases of backache inasmuch as the back muscles are employed to take the strain off distal structures, and thus in their turn become tired, and later the seat of actual pain. Further, if such a condition as a painful flatfoot be the first step in the formation of the vicious circle, the painful impressions may have so deranged segmental equilibrium as to facilitate the tiring of muscles innervated by higher segments. Thus, in cases of backache that are not of the types already described, we look for flat foot and if it be found, correct it; remedy the knock knee, and if a leg be shorter than its fellow we build a boot that will prevent the rotation of the pelvis that will otherwise assuredly occur. The spine itself and the trunk generally must be investigated for evidence of rotatory curvature, and it is the characteristic deformity of the trunk with its alternately prominent back and front that leads to a true conception of the case. In other patients no rotation has occurred, but some lateral curvature is evident which, if not remedied, will lead to the graver condition.

These spinal column abnormalities speak for tired muscles and strained ligaments, and such backaches must be treated by massage and suitable exercises. Not infrequently, in addition to the static error an anemic condition of the blood is partly responsible for the lowered muscular and fascial tone and such of necessity must be corrected.

6. *Is there any visceral disease that may be the cause of the backache?*

There are some visceral diseases that seem to lead directly to back pains, and we would note the stitch of an acute pleurisy that is situated posteriorly, and the localized pain and tenderness which may mark the position of a small pleural effusion as well as the deep boring pain that is dependent upon the pressure of an aneurism. Associated with the latter may be a persistent, intercostal neuralgia; and indeed this neuralgia may exist alone, and be the sole symptom of an aneurism of the descending thoracic aorta. Fortunately, we now have in the X-ray a means of diagnosing this latter condition. In abdominal aneurism intense local pain may be present which the patient, in my experience, usually locates by pressing in his hand deeply from the front. Often associated with it are shooting pains of great intensity which, in contrast to the pains of renal and hepatic colic, do not lead, per se, to nausea and vomiting. The aneurism is commonly palpable. The X-ray, whilst unable to register a shadow of the infradiaphragmatic aneurism, will determine if it has led to destruction of the vertebrae. A certain amount of local vertebral tenderness and rigidity may be present, and caries of the vertebrae or a growth may be simulated. Confusion is more apt to occur when the aneurism is situated high up between the pillars of the diaphragm. In such cases the absence of vertical pressure tenderness, the age of the individual, the absence of tubercular lesions or of a primary growth elsewhere, as well as the past history, and the frequent presence of a general cardio-vascular degeneration will aid in the diagnosis.

The visceral stimuli which result in the sensation of pain appear to arise when there occurs

- (a) General or local spasm in a hollow muscular organ e. g. ureteral colic.
- (b) General or local distention of an organ's capsule or walls e. g. a distended pelvis of the kidney.
- (c) Inflammatory processes of the serous coverings e. g. an adherent appendix.
- (d) Insufficient blood supply e. g. arteriosclerotic pain.
- (e) Forced excessive functioning e. g. excessive venery.

The pain which results is often not strictly confined within the anatomical borders of the organ from which the pain producing stimuli arise. This may be partly due to the fact that the viscera are ill provided with location nerve terminals, the nerve fibres functionally being allied to the protopathic skin fibres. Nevertheless, we would expect such pains to occur, more or less, in the vicinity of the organ at fault, and in cases of backache we naturally investigate the condition of the organ that lies subjacent to the area of the back in which the pain is felt. Thus, with pain in the region of one loin, we investigate the kidney of the same side, and with localized pain and tenderness be-

tween the two ribs, the underlying structure, i. e., the pleura. These pains which are felt in the organ itself are of a "dull," "heavy," "wearing" kind.

But many pains that are dependent upon visceral disease are of the nature of reflected pains. Messages arising in the organ at fault in consequence of the changes already outlined are conveyed to the spinal segments which innervate the particular organ and disturb the segmental equilibrium. The brain is accustomed to interpret such a segmental irritability as a pain arising in that skin zone of the body which is innervated by that segment whose equilibrium is disturbed.

These reflected visceral pains are commonly "sharp," "aching," or "stabbing," and often associated with

(a) Hyperesthesia of the skin over zones corresponding to the area innervated by the disturbed segment.

(b) Sometimes by tenderness and rigidity of the muscles innervated by the same segment.

If the path of the posterior primary division be favored, back pains are the result.

Since the viscera are connectel with definite spinal segments, the correlated body sensations due to lesions of any one viscus are exhibited in correspondingly definite areas of the body wall, and it is necessary to be acquainted with the segmental nerve supply of the viscera in investigating the causes of back pains. (See diagram.) Hyperesthesia of the segments is best sought for by drawing the blunt head of a pin from the healthy skin above and below toward the zone. When either border of the hyperesthetic zone is reached the patient complains that the head of the pin now occasions him considerable soreness, and may even complain that he is being pricked.

During periods of exacerbation of the casual lesion, or during times of increased nervous excitability e. g. menstruation, an overflow from the main segments may occur, and so we have a widening or diffusion of the pain area.

During periods of improvement of the local condition or of the general tone, the segmental equilibrium may be so restored that now only one or two small areas in the corresponding skin segments are painful or sensitive. These spots, which are commonly the seats of the most marked tenderness and pain, even when the whole segment is hyperesthetic, are termed by Head the "maximum spots." (See diagram.) It may happen that only pain which is referred to these maximum spots may be complained of, and tenderness at these spots may be absent. Tenderness at these spots is best sought for by pressure with a blunt pointed instrument.

*Backache in diseases of the pelvic organs.*

The same principles which we have referred to in speaking of pains from visceral disease naturally underlie the backaches that result from intra-pelvic disease. We would, however, note that the



muscles, particularly the levator ani muscles, support the pelvic floor, and can be compared in their action and susceptibility to strain and overwork to the long back muscles that help to support the body in the upright position, and that the pelvic fascia can be compared to the fascial and ligamentous tissues of the back. When the muscular pelvic diaphragm is weakened, naturally increased strain is thrown upon the fascia, and so pains may result. These tissues can be given rest by confining our patients to bed, and so backache and intra-pelvic pains that are due to the involvement of these tissues are relieved by such a procedure. Then there are reflected pains due to the previously mentioned lesions of the viscera themselves, and reference to the diagrams and tables will readily demonstrate what a wide area may be involved by such reflected pains. These intra-pelvic organs are more open to palpation than are the intra-abdominal viscera, and not only in such examination must the abnormalities that are present be noted, but in palpating, and in trying to judge of the mobility of these organs, an inquiry should be made as to whether or not pains similar to those complained of are produced. The part played by abnormalities of the sacro-iliac joints in the production of some of the backaches attributed to intra-pelvic disease, is a subject for further study.

If back pains which seem to be of the reflected variety be present, we first note their exact site, then find out what viscus is wholly or partly innervated by the same segment, then investigate the condition of that organ. E. g., let us suppose a patient has back pain and skin hypersensitiveness, or a maximum spot over the right loin. Reference to the figure shows this skin area is innervated by the tenth dorsal segment. But this segment partly innervates the kidney, the gall tract, the colon and the testis or the ovary. (See diagram.) We therefore particularly investigate the conditions of these organs in our search for the cause of the pain.

There is no doubt but that the development of these reflected pains is considerably favored, perhaps determined, when there occurs some general lowering of the vitality, or some special susceptibility of the nervous system which renders easy the disturbance of the segmental equilibrium. Thus it is that whilst some patients with severe gynecological troubles never complain of backache, with others it is a common symptom; thus it is that after remedying the condition that has apparently created the backache, time is needed before the affected segment will recover its tone, and even before the treated organ will cease to give rise to tone disturbing stimuli.

There are certain of these backaches commoner than others, and so located that in clinic work, where time is at a premium, we allow the site to suggest their most probable origin.

(a) There is the pain between the shoulders generally accompanied by epigastric pain, and associated with dyspeptic symptoms; such we believe to be of gastric origin.

(b) There is the dull, heavy pain located under

the right shoulder blade, and sometimes in the shoulder tip due to a swollen liver.

(c) There is the pain under the left shoulder blade, and sometimes in the left shoulder tip, due to an overloaded heart.

(d) There is the pain in the dorso-lumbar region due to a loaded colon, or to a varicocele, or a swollen cord or testis or ovary. Dr. Weeks of the Marine service tells me that most of the backaches he sees are due to varicocele, or cord or testical diseases, and are cured by the relief of these conditions.

(e) There is the pain associated with stone in the kidney which the patient locates by jabbing his thumb in the angle between the lowest rib and the erector spinæ muscle, a pain commonly brought on or exaggerated by violent movement, and sometimes so radiating as to give rise to a typical attack of renal colic with its developing tender testis.

(f) There is the pain associated with a stretching of the kidney pelvis, or of the kidney capsule, or with marked congestion of the kidney tissue, or with a dragging upon the renal pedicle which the patient locates by spreading his hand over the loin of the same side and which in turn may widely diffuse. The lesion in these cases often admits of actual demonstrations, for the X-ray will show the shadow of the stone, and the finger will detect the large prostate; or the cystoscope will show the trabeculated bladder or maybe the papilloma at the mouth of the ureter, all of which will speak for a distention of the renal pelvis.

(g) There is the pain localized by the patient across the base of the sacrum often due in the male to prostatic ailments; in women to uterine troubles.

(h) There is the pain over the site of the sacro-iliac synchondrosis often due to a distended vesicula seminalis, or to an inflamed utero-sacral ligament.

(i) There is the pain chiefly sacral in location which appears to be due to a stretching of the tissues of the pelvic floor, and which is almost always relieved by rest. Such pain is often also felt between the thighs and down the legs.

(j) There is a similarly located pain, maybe radiating, not relieved by rest, and which is frequently of rectal origin. The correct use of the proctoscope will determine the lesion present and suggest the treatment.

In none of these reflected backaches is rigidity of the spine or vertical pressure tenderness present as in diseases of the vertebræ; nor are they called forth by the action of the back muscles or by movements necessitating the stretching of fasciæ and ligaments as in the various lumbagos, though persistent effort may intensify them as it still more exhausts segmental tone.

The treatment of these varieties of backache of course consists in the remedying of the particular condition that ails the organ that is responsible for the backache, and a bracing up of the general body tone by a correct mode of life, and suitable exercises and maybe drugs.

(To be concluded in July.)

**CRIMINAL ABORTION.**

Report of the Committee, by J. Henry Barbat, Chairman.

Mr. President and Members of the San Francisco County Medical Society.

The work of the Committee on Criminal Abortion has been kept up during the past year and it affords me pleasure to report that we have been successful in causing the removal of most of the advertisements of the professional abortionists from the columns of the daily press. Our work has been hampered by the attitude of the newspapers in refusing to drop the objectionable ads until forced to do so by the Post Office Department. The Examiner is the only paper which immediately closed its "Medical" column, and refused to accept ads from the known abortionists. The Chronicle after writing to me and informing me that they would drop the ad of any individual whom I could show up as an abortionist, ignored absolutely an affidavit which was sent to them and continued to take every disreputable ad which came in. The Call ignored my communication and continued to collect tribute from men and women who gained their livelihood by murdering unborn babies. The Oakland Tribune and the Bulletin also ignored my communication. I wrote to the President of the Alameda County Medical Society asking the co-operation of that body, but received no reply. We succeeded in driving several of the advertising abortionists across to Oakland where they are posing as specialists, for the cure of diseases peculiar to men, having found that it was less risky and equally profitable to killing babies. One feature which shows the difficulties under which we have labored is the scheme adopted by most of the individuals who have been trapped of changing their names in the ads. Thus Dr. G. W. O'Donnell, the son of the illustrious C. C., was obliged to change his name to Dr. G. W. Olcot when the papers were notified that they would be barred from the mails if his ad appeared again. The co-operation of the newspapers with the professional abortionists is clearly shown by the fact that they are willing to accept ads from these people under false names. Dr. Olcot gave away to Dr. Moore, then to Dr. Black, who in turn became Dr. North, under which name Dr. O'Donnell is now advertising. At periodic intervals the papers publish what is known as the lottery edition which is of course denied the mails and circulates only in the City. In this edition will usually be found the ad under the right name, of one of the well known abortionists, also showing the perfidy of the press.

I have attempted to interest the District Attorney's office and have some of the most notorious abortionists prosecuted, but without success, because our State laws are so constituted that it is not considered wrong to advertise openly the sale of abortifacients, or to offer to perform criminal abortion. I would suggest to the committee on legislation that the attention of the legislature be called to the matter and proper laws be framed to enable the prosecuting attorneys to handle these cases when their attention is called to them.

It is unfortunately necessary to keep after the criminal class continuously, and it needs money to hire detectives to get evidence to convict them; I have willingly employed people during the past year, but I believe that the society should put aside a small sum annually for this purpose until our legislators see fit to frame ordinances which will make it a misdemeanor to publish the ad of any abortionist.

December, 1908.

**NEW AND NON-OFFICIAL REMEDIES.****VIBUTERO.**

An elixir, each 30 Cc. (one fluidounce) of which is said to represent: Blackhaw 2.6 Gm. (40 grains), cramp bark 2 Gm. (30 grains) squaw vine, wild yam, Jamaica dogwood and saw palmetto berries, of each 1.3 Gm. (20 grains), pulsatilla 0.65 Gm. (10 grains) in a menstruum containing 17 per cent. of alcohol. Dosage.—8 Cc. (2 fluidrams), three times a day, followed by a teacupful of hot water. Prepared by F. Stearns & Co., Detroit, Mich.

**VINUM EXTRACTI MORRHUAE.**

A wine containing in each 30 Cc. (one fluidounce) 0.26 Gm. (4 grains) of alcoholic extract of fresh cod liver (made from fresh livers received in alcohol and containing their full amount of oil) and 0.26 Gm. (4 grains) of peptonate of iron in a menstruum containing 15.25 per cent. of alcohol.

Actions and Uses.—It has been introduced as a substitute for cod liver oil. It is not believed by pharmacologists generally that the oil free extracts represent any considerable part of the therapeutic efficiency of cod liver oil. Dosage.—15 Cc. (4 fluidrams) before meals and at bedtime. Manufactured by F. Stearns & Co., Detroit, Mich.

**XEROFORM.**

Xeroform,  $\text{Bi}_2\text{O}_3 \cdot \text{OH} \cdot (\text{OC}_6\text{H}_4\text{Br})_2 = \text{C}_6\text{H}_4\text{O}_2\text{Br}_2\text{Bi}_2$ , is a chemical combination of bismuthyl oxide and tribrom-phenol, containing nearly 60 per cent. of  $\text{Bi}_2\text{O}_3$ .

Actions and Uses.—Xeroform is a non-irritant and non-toxic antiseptic. It is recommended as an odorless and efficient substitute for iodoform; as a specific in ulcer cruris and all weeping eczemas; internally, in gastrointestinal catarrh, proctitis, dysentery, bacillary and choleraic diarrhea, cholera infantum, etc. Dosage.—1 to 3 Gm. (15 to 45 grains) per day to adults; 0.12 to 0.3 Gm. (2 to 5 grains) at a dose to children. Externally, as a dusting powder, in bandages, etc., like iodoform. Manufactured by The Heyden Chemical Works, New York.

**ADNEPHRIN SUPPOSITORIES.**

Each suppository represents a 1 to 1,000 combination of adnephrin with oil of theobroma and weighs about 1 Gm. (15 grains).

Actions, Uses and Dosage.—See Suprarenal Alkaloid and Adnephrin Solution. Prepared by Frederick Stearns & Co., Detroit, Mich.

**BOARD OF MEDICAL EXAMINERS.**

The following are the names of those appointed by the Governor on the State Board of Medical Examiners:

Walter Lindley, M. D., Los Angeles.  
W. W. Roblee, M. D., Riverside.  
J. Henry Barbat, M. D., San Francisco.  
Charles L. Tisdale (H), M. D., Alameda.  
Charles Clark (E), M. D., San Francisco.  
W. M. Mason (E), M. D., Lodi.  
W. H. Stiles (H), M. D., San Bernardino.  
D. L. Tasker (O), M. D., Los Angeles.  
W. L. Vanderburg (O), San Francisco.  
G. F. Reinhardt, Berkeley.  
F. R. Burnham, San Diego.

The Board met for organization early in May, but at the time of going to press we have not learned the result of the election of officers.

**COUNTY SOCIETIES  
ALAMEDA COUNTY.**

Dr. Albert Abrams, of San Francisco, addressed the society on the subject of thoracic aneurism. He coined the word spondylotherapy, to indicate the rational treatment of disease by means of methods

applied to the spinal region. He reviewed the history of this subject and directed attention to numerous vertebral reflexes which he had discovered and which subserved a valuable purpose in diagnosis and treatment. Special attention, however, was directed to the aortic reflexes of contraction and dilatation. The former was elicited by concussion of the seventh cervical vertebra, and the latter by concussion of the four lower dorsal vertebrae.

After eliciting the aortic reflex of dilatation, one could define the arch of the normal aorta and any increase in the area of the latter signified either dilatation or aneurism of the aorta. He had examined forty-two cases of thoracic aneurism and noted an absence of the reflexes in only two patients in whom the aneurism had attained enormous dimensions. It had occurred to the speaker that, if concussion of the seventh cervical spine would cause contraction of an aneurismal sac, this fact could be utilized in treatment and the results had exceeded his expectations. The treatment consisted of percussion vibration of the seventh cervical spine. The results are immediate and within a few minutes the pressure symptoms can be made to evanesce. He recited the histories of several patients and presented one patient to the society. In the latter case all the symptoms had practically disappeared after the first treatment and the patient had gained twelve pounds in weight in about two weeks. The speaker had not the hardihood to regard his method as curative, for time alone was the decisive factor, yet a conservative estimate of the results prompted him to say, that as a palliative method of treatment it surpassed any which has yet been introduced. He referred to the comment of one noted physiologist, who declared that the reflexes were not possible for the reason that the aneurismal vessel had lost its elasticity. We concede, said the speaker, that an aneurism pulsates, and as this phenomenon is dependent on the elastic recoil of the walls, it follows that elasticity of the vessel is not annihilated in aneurism. The physiology of the aortic reflex of contraction concerns itself with stimulation of one of the subsidiary vasoconstrictor centers in the cord which has been empirically located at the spine of the seventh cervical vertebrae, whereas the counter reflex of dilatation is evoked by stimulation of the vasodilator centers in the cord.

#### SHASTA COUNTY.

The Shasta County Medical Society met April 17th in Redding. Dr. R. T. Legge of McCloud read a paper on "Iodine as an Adjunct in Surgery," in which he extolled its merits as a sterilizing solution for sutures, and in strong solution or tincture for sterilizing finger nails, vaginas and within uterus in puerperal sepsis. He recommended it highly in sinuses and pus cavities and reported several cases of chronic empyema after resection in which irrigation with a straw-colored solution brought quick cures.

Dr. C. E. Reed of Redding read a paper on "A Theory and Possible Method of Prevention of Eclampsia," in which he showed that 1/20-1/30 gr. doses of calomel every hour increased the quantity of urine and urea which was found greatly reduced at commencement of treatment to near normal in several pregnant women, while at the same time the amount of albumen was reduced or remained the same. The cause of eclampsia was not to be sought in the kidney, but possibly in the liver, as indicated by the urea.

Dr. Legge exhibited an appendix studded with tubercles which was removed from a young man with tubercular peritonitis.

The committee on Fee Bill reported a "Revision upwards" which was adopted.

Dr. Hugh Cross of Dunsmuir and Dr. Chas. A. Bell of Round Mountain were elected to membership. B. F. SAYLOR, Secretary.

#### NEW SOCIETY FORMED.

A society has been organized under the auspices of the Public Health Association for the study and prevention of the venereal diseases. All interested are asked to give their names to Dr. Frances M. Greene, President, of Berkeley, or Dr. Archibald, Secretary.

#### TO THE EDITOR.

Dr. Philip Mills Jones,  
San Francisco, California.

Dear Doctor:

In "Human Life," a magazine of which I never heard until I received the April copy, there appears a writeup of father, Charlie and I, which is substantially a reproduction of the article published broadcast about two years ago, and about which we wrote a letter to the medical journals at that time. This particular issue is written so fulsomely as to hold us up to derision and has been sent as a marked copy to a large proportion of the regular medical profession in Wisconsin, Minnesota and Iowa. Not only has this marked copy been sent, but a few days after a follow-up letter came, again calling particular attention to this article under the guise of asking for subscriptions.

So far as we can learn it has been sent only to physicians, and evidently maliciously, with a view of injuring our standing with the medical profession; as every practitioner receiving such a copy would take it as a personal insult. Many physicians with whom we are not acquainted might believe that we knew of it or could have prevented it.

The animus lying behind this attack is evidently the same as is trying to secure a change in the management of the Journal and the Association; evidently the idea is to discredit the Association through attacks upon those who have been influential in its management. I was president of the American Medical Association when some of these reform movements were initiated.

Can you tell me whether there has been the same distribution of the "Human Life" magazine in your State? If you can learn anything which will be useful to us in protecting ourselves please let us know.

Yours very truly,  
W. J. MAYO.

#### PUBLICATIONS.

**Clinical Diagnosis and Treatment of Disorders of the Bladder with Technique of Cystoscopy.** By Follen Cabot, M. D. Price, \$2.00. E. B. Treat & Co., 1909.

It is very evident that this work is almost entirely the result of the author's personal experience and not a compilation of facts derived from other sources. It deals with the subject in a most practical and interesting manner. The author includes facts pertaining to the prevalence of syphilis and gonorrhea in the innocent and calls attention to the educational measures which are of value in diminishing the ravages of these diseases in the innocent; and while the author has deviated from the subject of the book in this particular, he is to be congratulated for so doing and I trust it will aid Dr. Cabot in his good work in this direction. The classification of epithelia is taken from Lenhartz-Brooks and is based upon their appearances when scraped from the mucosae, and which rarely corresponds to the appearances when found in urine. The illustrations of epithelia are very incomplete and misleading. Cystoscopy is treated in a most practical manner and distinctly shows that the author writes from a large practical experience. In connection with the subject of tumors



of the bladder, the author does not fully realize the value of the Nitze operating cystoscope; while he admits that Nitze and others have successfully removed many tumors from the bladder, he almost immediately follows this statement by questioning the completeness of the operation. The author admits that he has had no experience in this direction, and I am sure he does not recognize the advantages of the method when properly carried out. The book is full of practical facts, however, and is deserving of the highest recommendation.

H. M.

### NEW AND NON-OFFICIAL REMEDIES.

Since advising you April 1st, the Council has acted on the following products:

Articles accepted for N. N. R.:

- Arsacetin (Victor Koechl & Co.).
  - Urethan "Hoechst" (Victor Koechl & Co.).
  - Soamin (Burroughs Wellcome & Co.).
  - Tabloid Soamin (Burroughs Wellcome & Co.).
  - Bile Salts (Fairchild Bros. & Foster).
  - Iodone Surgical Dressing and Dusting Powder (Henry C. Blair Co.).
- Articles accepted for N. N. R. Appendix:
- Elixir Duozyrna (Louisville Pharm. Works).

### CHANGES OF ADDRESS.

- Zobel, Alfred J.**, to 518-520 Shreve Bldg., San Francisco, Cal.
- Dixon, Thos. Harry**, Grafton, Yolo Co., Cal.
- Brown, Fred'k A.**, Lompoc, Cal.
- Wilkes, Jno. P.**, Boulder Creek, Cal.
- Kay, Milton M.**, Artesia, Los Angeles Co., Cal.
- Beckett, Wesley W.**, from Pacific Mutual Building to Exchange Building, Los Angeles, Cal.
- Barnum, O. S.** (Retired), from 443 S. State st., to Fay Building, Los Angeles, Cal.
- Norton, Frank L.**, from Mason Bldg., to 2311½ Vermont ave., Los Angeles, Cal.
- Shumway, Jno. P.**, from 1131 Westlake ave., to San Fernando Bldg., Los Angeles, Cal.
- Wing, Elbert**, from Kerckhoff Bldg., to 560 S. Main st., Los Angeles, Cal.
- Jordan, Fischer R.**, from 1111 Washington st. to First National Bank Bldg., Oakland, Cal.
- Ledyard, C. C.**, Las Encinas, Los Angeles Co., Cal.
- McNeil, Harvey G.**, from Pacific Mutual Bldg., to Exchange Bldg., Los Angeles, Cal.
- Walker, Benj. F.**, from Baldwin Bldg., to Elks' Bldg., Stockton, Cal.
- Decker, C. W.**, from 643 W. 16th, to 656 W. 16th, Los Angeles, Cal.
- Wood, W. B.**, from 4501 Central ave., to San Fernando Bldg., Los Angeles, Cal.
- Legault, Jos. W.**, from 14 San Pablo ave., to 1219 Broadway, Oakland, Cal.
- Dodds, Thos. G.**, from San Francisco to 1202 E. 23rd st., Oakland, Cal.
- Wismar, Wm. F.**, from Pacific Electric Bldg., to Wright and Callender Bldg., Los Angeles, Cal.
- Winter, Albert H.**, from 313 W. 3rd st., to Wright & Callender Bldg., Los Angeles, Cal.
- Butler, Jos.**, from 1178 Eddy st., to Phelan Bldg., San Francisco, Cal.
- Prentiss-Smith, Alice**, from Turlock, to 1306 5th st., San Diego, Cal.
- Bryant, Chester W.**, from Oroville, to Redding, Shasta Co., Cal.
- Chase, Raymond E.**, from Frost Blk., Los Angeles, to 615 W. 4th, Glendale, Cal.
- Hull, J. P.**, from Holden Drug Store Bldg., to Savings and Loan Bldg., Stockton, Cal.
- Mauzy, Wm. P.**, from 654 14th st., to 1207 Grove st., Oakland, Cal.
- Campiche, Paul L.**, 1705 Powell st., San Francisco.

**Wahl, Hugo A.**, from 1703 O'Farrell st. to Pacific Bldg., San Francisco.

**Cothran, W. F.**, from Dos Palos, to Seabright, Santa Cruz Co., Cal.

**Bates, Homer O.**, from 357 E. Ocean Park ave., to 11 Pine st., Long Beach, Cal.

**Leix, Fred'k**, from San Francisco, to Napa st., Sonoma, Cal.

**Gundry, F. J.**, from San Francisco, to McCloud, Cal.

**Ballard, J. Stow**, from 3303 Clay st. to 135 Stockton st., San Francisco, Cal.

**Luttrell, P. H., Jr.**, 135 Stockton st., San Francisco.

**Potter, C. D.**, from 2034 Baker st., to 135 Stockton st., San Francisco, Cal.

**Wrenn, Jos. T.**, from 1111 Stanyan st., to 3605 20th st., San Francisco, Cal.

**Nelson, Lois**, from 621 55th st., Oakland, to 1876 Cedar st., Berkeley.

**Bell, Chas. A.**, from Los Angeles, to Round Mountain, Shasta Co., Cal.

**Freiman, H. M.**, from San Francisco, to Amador City, Amador Co., Cal.

**Crees, Robt.**, from San Luis Obispo, to San Mateo, Cal.

**Rommel, A. J.**, from 1253 6th ave., to Phelan Bldg., San Francisco, Cal.

**O'Brien, Jas. W.**, 201 K. st., Sacramento, Cal.

**Gray, Frank P.**, from 2407 Sacramento st., to 2401 Buchanan st., San Francisco.

### NEW MEMBERS.

- Taylor, H. N.**, Maricopa, Cal.
- Cook, W. H.**, McKittrick, Cal.
- Queirolo, C. A.**, Oakland, Cal.
- Abrahamson, Milton**, San Francisco.
- Jacobs, S. N.**, Trinity Hospital, San Francisco.
- Baker, C. C.**, San Francisco.
- Shortlidge, E. D.**, San Francisco.
- Guntz, A. V.**, San Francisco.
- Molony, Martin**, San Francisco.
- Paroni, Romilda**, San Francisco.
- Williams, Edith Hammond**, San Francisco.
- Rothganger, Geo.**, San Francisco.
- Birtch, Fayette W.**, San Francisco.
- Bruman, A. K.**, San Francisco.
- Campiche, Paul**, San Francisco.
- Canney, Fred'k G.**, San Francisco.
- Dozier, E. D.**, San Francisco.
- Kronenberg, H.**, San Francisco.
- Munter, Leo**, San Francisco.
- Murphy, J. D.**, San Francisco.
- Newman, Lester**, San Francisco.
- Nielsen, Soren**, San Francisco.
- O'Neil, M. E.**, San Francisco.
- Painton, H. R.**, San Francisco.
- Rochex, Jos.**, San Francisco.
- Ross, A. B.**, San Francisco.
- Rosenthal, A. G.**, San Francisco.
- Wortmann, H.**, San Francisco.
- Castle, H. E.**, San Francisco.
- Palmer, C. B.**, San Francisco.
- Greene, Frances M.**, San Francisco.
- Powers, C. L.**, San Francisco.
- Berg, Adolph**, San Francisco.
- Rommel, A. J.**, San Francisco.
- Taubles, G. H.**, San Francisco.
- Chadwick, F. C.**, San Francisco.
- Deininger, Marguerite**, Point Richmond, Cal.
- Cross, Hugh**, Dunsmuir, Cal.
- Bell, Chas. A.**, Round Mountain, Cal.
- Haworth, M. W.**, Sacramento, Cal.
- Watson, Wm. S.**, Sacramento, Cal.

### DEATHS.

- Pirtle, Jno. M.**, Los Angeles, Cal.
- Zabala, J. L.**, Salinas, Cal.
- Arnold, J. R.**, formerly of Redding, died in Alameda, Cal.

## BOARD OF EXAMINERS, APRIL SESSION.

## Passed.

School of Medicine.	Date of Graduation.	Percentage.
Cal. (Ecl.) Med. Coll., Cal.....	5, 16, 06	78.0**
Coll. of P. & S., Los Angeles, Cal.....	6, 26, 08	75.0**
Coll. of P. & S., S. F., Cal.....	5, 14, 08	82.1*
Coll. of P. & S., S. F., Cal.....	5, 10, 08	81.7
Coll. of P. & S., S. F., Cal.....	5, 17, 06	80.5*
Coll. of P. & S., S. F., Cal.....	5, 17, 06	78.2**
Coll. of P. & S., S. F., Cal.....	5, 17, 06	76.6**
Coll. of P. & S., S. F., Cal.....	6, 6, 07	76.2*
Coll. of P. & S., S. F., Cal.....	5, 17, 06	75.7**
Coll. of P. & S., S. F., Cal.....	1, 25, 02	75.2*
Coll. of P. & S., S. F., Cal.....	6, 6, 07	75.0***
Cooper Med. Coll., S. F., Cal.....	5, 8, 07	79.0
Cooper Med. Coll., S. F., Cal.....	5, 9, 05	76.0
Cooper Med. Coll., S. F., Cal.....	5, 5, 08	75.0
Hahnemann Med. Coll. of the Pac., Cal.....	5, 21, 08	76.5*
Univ. of Cal., S. F., Cal.....	5, —, 08	89.1
Univ. of Cal., S. F., Cal.....	5, 13, 08	80.8
Univ. of Cal., S. F., Cal.....	5, 12, 08	79.9**
Univ. of Cal., S. F., Cal.....	5, 12, 08	78.6*
Univ. of So. Cal., L. A., Cal.....	6, 13, 07	80.7*
Univ. of So. Cal., L. A., Cal.....	6, 14, 06	80.5**
Univ. of So. Cal., L. A., Cal.....	6, 18, 08	78.5
Univ. of So. Cal., L. A., Cal.....	6, 18, 08	75.0
Univ. of So. Cal., L. A., Cal.....	6, 13, 07	75.0***
Univ. of So. Cal., L. A., Cal.....	9, 5, 04	75.0*****
Coll. of P. & S., St. Louis, Mo.....	4, 27, 08	75.6*
Coll. of P. & S., N. Y.....	6, 12, 07	83.6
Dunham Med. Coll., Chicago, Ill.....	5, 8, 02	75.0
Harvard Med. School, Mass.....	—, —, 99	83.5
Harvard Med. School, Mass.....	6, 26, 07	81.4
Ky. School of Med., Ky.....	6, 23, 93	85.8
Marion-Sims Med. Coll., Mo.....	4, 9, 98	80.3
Med. Coll. of Indiana.....	3, 29, 98	81.3
Northwestern Univ., Ill.....	6, 15, 99	77.0
Rush Med. Coll., Ill.....	6, 8, 09	90.9
State Univ. of Iowa.....	3, 9, 92	82.1*
Tulane Univ., La.....	6, 20, 08	75.1
Univ. of Minn.....	6, 4, 96	82.4
Univ. of Toronto, Can.....	6, —, 06	87.0
Univ. of Vermont.....	6, 26, 07	75.0*
Univ. of Vermont.....	7, 5, 00	78.0
Washington Univ., Mo.....	5, 23, 07	87.4*
Woman's Med. Coll. of Penn.....	5, 20, 08	84.2
Yale Univ., Conn.....	6, —, 04	86.4

## Failed.

Coll. of P. & S., L. A., Cal.....	6, 26, 08	52.0*
Coll. of P. & S., L. A., Cal.....	6, 26, 08	28.0*
Coll. of P. & S., S. F., Cal.....	5, —, 06	72.3*
Coll. of P. & S., S. F., Cal.....	6, 6, 07	72.1***
Coll. of P. & S., S. F., Cal.....	6, 6, 07	70.0
Coll. of P. & S., S. F., Cal.....	5, 22, 06	45.5
Hahnemann Med. Coll. of the Pac., Cal.....	5, 21, 08	72.3*
Univ. of So. Cal., L. A., Cal.....	6, 18, 08	72.4
Baltimore Med. Coll., Md.....	5, 21, 08	62.0
Coll. of P. & S., Univ. of Ill.....	5, 20, 02	73.4
Creighton Med. Coll., Nebr.....	5, 3, 04	70.0
Hahn. Med. Coll., Chicago, Ill.....	3, —, 86	75.8
Hahn. Med. Coll., Chicago, Ill.....	4, 2, 98	70.5
Harvard Med. School, Mass.....	6, 29, 98	69.3
Homeo. Coll., Univ. of Mich.....	6, 30, 92	66.0
Jefferson Med. Coll., Pa.....	5, 4, 94	66.6*
Jefferson Med. Coll., Pa.....	5, 15, 95	56.2*
Ky. Sch. of Med., Ky.....	3, 15, 89	65.2
Oregon Univ., Med. Dept., Oreg.....	5, 4, 08	73.8
State Univ. of Iowa.....	3, 12, 90	69.9*
Univ. of Mich., Dept. of M. & S., Mich.....	6, —, 02	70.8
Washington University, Mo.....	5, 2, 01	73.6

## Osteopathy—Passed.

L. A. Coll. of Osteopathy, Cal.....	1, —, 08	78.5
L. A. Coll. of Osteopathy, Cal.....	1, 28, 09	78.4
L. A. Coll. of Osteopathy, Cal.....	1, 28, 09	78.4
Pac. Coll. of Osteopathy, Cal.....	2, 4, 09	77.3

## Osteopathy—Failed.

Pac. Coll. of Osteopathy, Cal.....	2, 4, 09	68.1
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\* Taken before.

## NEW LICENTIATES.

Abbott, Ura S.; Anderson, Oscar; Baird, Harry R.; Barber, Ora M.; Barnard, R. P.; Blass, Leo; Burch, E. Lee; Cartwright, S. W.; Crane, C. C.; Davis, Wm. O.; Dickson, Ernest C.; Elder, Alva R.; Ferry, Francis C.; Fleischner, Emanuel C.; Foster, Harry E.; Goodfellow, Ferdinand; Graham, Chas. Martin; Grimmer, E. M.; Hanley, Jas. C.; Harris, I. Dee; Howard, Burt Foster; Howe, Louis P.; Jackson, Arthur H.; Jewel, Robert T.; Krebs, Otto F.; Lantz, Viola; McKibbin, Fred W.; MacLaughlin, W. E.; Macrae, Annie D.; Moore, Harry S.; Norton, Chas. Worth; Powell, Alvin; Preston, Addison W.; Prigge, Henry; Ragland, D. C.; Reud, Wm. R.; Richards, Chas. M.; Shilling, W. R.; Simonds, Paul E.; Skoonberg, A. E.; Smith, B. F.; Spalding, Robert B.; Styan, Wm. E.; Thorpe, Harvey L.; White, Laertes T.; Williams, Harry deNell; Wood, W. A.; Young, F. P.

## ARMY MEDICAL CORPS EXAMINATIONS.

The Surgeon General of the Army announces that preliminary examinations for appointment of first lieutenants in the Medical Corps of the Army will be held on July 12, 1909, at points to be hereafter designated.

Full information concerning the examination can be procured upon application to the "Surgeon General, U. S. Army, Washington, D. C." The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between 22 and 30 years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training or its equivalent in practice. The examinations will be held concurrently throughout the country at points where boards can be convened. Due consideration will be given to localities from which applications are received, in order to lessen the traveling expenses of applicants as much as possible.

The examination in subjects of general education (mathematics, geography, history, general literature, and Latin) may be omitted in the cases of applicants holding diplomas from reputable literary or scientific colleges, normal schools or high schools, or graduates of medical schools which require an entrance examination satisfactory to the faculty of the Army Medical School.

The recent Act of Congress giving an increase in the Medical Corps, together with a larger regular Army, will permit of a great variety of medical and surgical work, besides affording opportunities for those specially qualified to engage in special work, such as surgery, sanitation, chemistry, pathology, microscopy and bacteriology.

All appointments are made with the rank of first lieutenant (\$2,000 per annum). At the end of three years the officer is promoted to captain at \$2,400, which, at the end of five years' service is increased to \$2,640, etc. In addition to this, officers are furnished with quarters, medical attendance and medicines for themselves and their families, the privileges of the commissary, mileage at the rate of seven (7) cents per mile when traveling under orders, and allowed one month's leave per year with full pay, which may be allowed to accumulate to a maximum of four months; also the privilege of retirement. These allowances are estimated to add from \$1200 to \$1600 to the yearly compensation in the grades of First Lieutenant and Captain.

In order to perfect all necessary arrangements for the examination, applications must be complete and in possession of the Adjutant General of the Army on or before June 10, 1909. Early attention is therefore enjoined upon all intending applicants, and free correspondence with the Surgeon General's office is invited on any subject connected with the examination. There are at present 103 vacancies in the Medical Corps of the Army.

## UNITED STATES PHARMACOPOEIAL CONVENTION.

## Official Announcement of the First Decennial Meeting.

Philadelphia, Pa., May 1, 1909.

In accordance with the provisions of Article VIII, Chapter 1, of the By-Laws of the U. S. Pharmacopoeial Convention, the president of the convention hereby invites the several bodies, entitled under the constitution to representation therein, to appoint delegates to the first Decennial meeting of the said convention to be held in the City of Washington, May 10, 1910.

The attention of all concerned is invited to the following extract from the constitution:

## ARTICLE II.

## Membership.

Section 1. The members of the United States Pharmacopoeial Convention, in addition to the incorporators and their associates, shall be delegates elected by the following organizations in the manner they shall respectively provide: Incorporated Medical Colleges, and Medical Schools connected with Incorporated Colleges and Universities; Incorporated Colleges of Pharmacy, and Pharmaceutical Schools connected with Incorporated Universities; Incorporated State Medical Associations; Incorporated State Pharmaceutical Associations; the American Medical Association, the American Pharmaceutical Association, and the American Chemical Society; provided that no such organization shall be entitled to representation unless it shall have been incorporated within and shall have been in continuous operation in the United States for at least five years before the time fixed for the decennial meeting of this corporation.

Sec. 2. Delegates appointed by the Surgeon-General of the United States Army, the Surgeon-General of the United States Navy, and the Surgeon-General of the United States Marine Hospital Service, and by the organizations not hereinbefore named which were admitted to representation in the convention of 1900, shall also be members of the corporation. Each body and each branch of the United States Government above mentioned shall be entitled to send **three delegates** to the meetings of this corporation. But no such delegates as are provided for in this article shall be members until their credentials shall have been examined and acted upon as provided for by the by-laws. Delegates admitted as members at any decennial meeting shall continue to be members of the United States Pharmacopoeial Convention until their successors shall have been appointed and admitted as delegates to the ensuing convention and no longer.

Notification of the appointment of delegates, accompanied by the necessary certification of eligibility as required by Article II, Section 1, of the Constitution above quoted, should be forwarded as soon as practicable to the Secretary of the Board of Trustees.

HORATIO C. WOOD, M. D.,  
President.

MURRAY GALT MOTTER, M. D.,  
Secretary of the Board of Trustees,  
1841 Summit Place, Washington, D. C.